Pathways to sustainable agricultural investments in the Lao PDR:

Transformations in natural resource and labour relations through land-based investments and their impacts on human well-being

Inaugural dissertation

of the Faculty of Science,

University of Bern

presented by

Vong Nanhthavong

from the Lao PDR

Supervisor of the doctoral thesis:

Prof. Dr. Peter Messerli

Professor for Sustainable Development and Director, Wyss Academy for Nature at the University of Bern

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The Dean

Prof. Dr. Zoltan Balogh

Summary

After an initial boom in the early years of the millennium, global land-based investments, also called Large-Scale Land Acquisitions (LSLAs), have slowed in recent years, but their impact on local environments and human well-being still poses a challenge for fulfilling the 2030 Agenda for Sustainable Development. The debate on the effects of LSLAs lacks systematic assessment at the meso-level of spatial and administrative scale – a level that is critical for informing national policies. This research addresses that issue by first explaining how LSLAs entail differential impacts on local livelihoods, and second, by revealing how positive outcomes to these investments can be achieved in the context of the Global South.

My analysis of the recent land concession inventory of the Lao PDR, including the scope, scale and socio-ecological context of LSLAs, reveals how land deals have impacted local livelihoods. They have transformed natural resources and labour relations by pushing former land users into precarious situations and onto pathways leading to different well-being outcomes. The affected villages have experienced different degrees of poverty increase or reduction. This research suggests that looking only at quantitative variables, especially the size of the land acquisitions, is a poor predictor of their socio-economic impacts. A better understanding of key variables is urgently needed to avoid both misinterpretations of the impact and misguided land-based investment policies.

Using a methodological approach that includes an examination of monetary poverty, multiple dimensions of human well-being, primitive accumulation, and precarity, this research suggests that the pathway to improved human well-being in the context of LSLAs is very narrow. The decrease in monetary poverty in most villages has not resulted in positive human well-being outcomes. In terms of employment, which is the most important and immediate benefit that smallholders can enjoy, the findings reveal that in some cases, the peasants have experienced dispossession without proletarianization. In many cases, semi-proletarianization has occurred, but through adverse terms rather than could be part of a sustainable livelihood strategy.

To avoid the negative impacts and ensure that land deals contribute to sustainable agricultural growth, this dissertation emphasizes four key points: 1) A comprehensive socio-environmental impact analysis and monitoring that includes natural resources such as non-timber forest products, timber and wild animals must be implemented rather than just focusing on the land itself. Implementation of the relevant accompanying measures must take place throughout the business cycle. Protecting access to the land and other resources is imperative as natural resources still play a significant role in rural resilience. This will ensure that smallholders, particularly women and vulnerable groups like ethnic minorities, can sustain their traditional livelihoods, especially during the transition period. 2) Adverse outcomes tend to occur in cases in which smallholders are dependent on natural resources for a living rather than already being engaged in the non-farm sector. Therefore, the development of LSAs must consider the socio-ecological heterogeneity of peasant livelihoods. 3) The International Code of Conduct (free, prior, and informed consent) per se does not guarantee positive well-being outcomes but it does provide space for consultation and negotiation. Thus, it is an important tool that should be applied by the investors, but should not be considered as the solution for safeguards. 4) Promoting land-based investments as a means of poverty reduction in rural areas by moving from the natural resource- to wage-based livelihoods is effective only with accompanying related measures. The national government should consider appropriate trade-offs among different development goals – for example, large-scale, labour-intensive investments may not significantly contribute to national growth but they may generate a higher number of jobs which may have a great positive impact on human well-being.

ບົດສັງລວມຫຍໍ້ (in Lao)

ພາຍຫຼັງທີ່ໄດ້ມີການຂະຫຍາຍຕົວຢ່າງໄວວາ ແລະ ກວ້າງຂວາງ, ການລົງທຶນໃນຂົງເຂດທີ່ດິນ ຫຼື ເອີ້ນວ່າ ການເຊົ່າ-ສໍາປະທານທີ່ດິນຂະໜາດໃຫຍ່ (LSLAs) ຢູ່ໃນໂລກໃນຊຸມປີມໍ່ໆນີ້ ໄດ້ມີການຂະຫຍາຍຕົວຊ້າລົງ ແຕ່ຜົນກະທົບຂອງມັນຕໍ່ກັບສິ່ງແວດລ້ອມ ແລະ ການມີຊີວິດການເປັນຢູ່ທີ່ດີ (Human well-being) ຂອງທ້ອງຖິ່ນ ຍັງເປັນສິ່ງທ້າທາຍໜຶ່ງ ຕໍ່ກັບການບັນລຸເປົ້າໝາຍການພັດທະນາແບບຍືນຍົງປີ 2030. ການຖົກຖຽງ ກ່ຽວກັບ ຜົນກະທົບຂອງ LSLAs ແມ່ນຍັງຂາດຂໍ້ມູນຫຼັກຖານ ທີ່ໄດ້ຈາກການວິເຄາະຂໍ້ມູນຢ່າງເປັນລະບົບໃນລະດັບຊາດ ຊຶ່ງເຫັນວ່າ ມີຄວາມສໍາຄັນຫຼາຍ ຕໍ່ກັບນະໂຍບາຍແຫ່ງຊາດ. ການຄົ້ນຄວ້ານີ້ ໄດ້ປະກອບສ່ວນໃນການປິດຊ່ອງຫວ່າງດັ່ງກ່າວ ໂດຍ ທໍາອິດໄດ້ວິເຄາະເຖິງ ບັນດາຜົນກະທົບ ຂອງ LSLAs ຕໍ່ກັບຊີວິດການເປັນຢູ່ຂອງທ້ອງຖິ່ນ ວ່າເກີດຂຶ້ນແນວໃດ ແລະ ຈາກນັ້ນ ໄດ້ວິເຄາະເຖິງ ແນວທາງທີ່ສາມາດເຮັດໃຫ້ການລົງທຶນ ດັ່ງກ່າວ ມີຜົນໄດ້ຮັບດ້ານບວກຢູ່ໃນປະເທດກໍາລັງພັດທະນາ.

ຜົນໄດ້ຮັບຈາກການວິເຄາະຂໍ້ມູນ ການຂຶ້ນບັນຊີໂຄງການເຊົ່າ ແລະ ສໍາປະທານທີ່ດິນ ຂອງລັດຢູ່ສປປ ລາວ ທີ່ມີຢູ່ລ້າສຸດ ຊຶ່ງລວມມີຂໍ້ມູນກ່ຽວກັບປະເພດ ແລະ ຂະໜາດ ຂອງການລົງທຶນຢູ່ໃນ ສະພາບແວດລ້ອມດ້ານເສດຖະກິດ-ສັງຄົມ ແລະ ນິເວດວິທະຍາຕ່າງໆ ໄດ້ສະແດງເຖິງ ຂະບວນການ ທີ່ໂຄງການລົງທຶນດັ່ງກ່າວ ໄດ້ສົ່ງຜົນກະທົບຕໍ່ກັບຊີວິດການເປັນຢູ່ຂອງທ້ອງຖິ່ນ. ການລົງທຶນເຫຼົ່ານີ້ ໄດ້ປ່ຽນແປງສິດທິການຖືຄອງທີ່ດິນ ແລະ ສາຍພົວພັນດ້ານກໍາລັງແຮງງານ ໂດຍໄດ້ເຮັດໃຫ້ ເຈົ້າຂອງທີ່ດິນຕ້ອງຕົກຢູ່ໃນສະພາບຄວາມບໍ່ແນ່ນອນ ແລະ ມີລະດັບຊີວິດການເປັນຢູ່ທີ່ແຕກຕ່າງກັນ. ນອກນັ້ນ, ບ້ານທີ່ໄດ້ຮັບຜົນກະທົບ ມີລະດັບຄວາມທຸກຍາກເພີ່ມຂຶ້ນ ຫຼື ຫຼຸດລົງ ໃນລະດັບທີ່ບໍ່ຄືກັນ. ຜົນຂອງການຄົ້ນຄວ້ານີ້ ແນະນໍາວ່າ ການທີ່ນໍາເອົາແຕ່ຂໍ້ມູນດ້ານປະລິມານ ໂດຍສະເພາະແມ່ນ ຂະໜາດຂອງທີ່ດິນ ມາເປັນເກນໃນການປະເມີນ ແມ່ນບໍ່ເປັນຕົວຊີ້ວັດທີ່ດີ ໃນການປະເມີນຜົນກະທົບທາງດ້ານເສດຖະກິດ-ສັງຄົມ ຂອງ LSLAs ຊຶ່ງອາດນໍາໄປສູ່ການເຂົ້າໃຈທີ່ຜິດພາດ ກ່ຽວກັບ ຜົນກະທົບຂອງມັນ ແລະ ອາດນໍາໄປສູ່ການກໍານົດນະໂຍບາຍທີ່ບໍ່ສອດຄ່ອງ.

ໂດຍການນໍາໃຊ້ບັນດາວິທີການຕ່າງໆ ລວມມີ ການປະເມີນຄວາມທຸກຍາກໂດຍອີງໃສ່ລາຍຮັບເປັນຫຼັກ, ການມີຊີວິດການເປັນຢູ່ທີ່ດີ, ການຄອບຄອງກໍາລັງການຜະລິດ ເພື່ອເຮັດໃຫ້ເຈົ້າຂອງທີ່ດິນກາຍເປັນແຮງງານຮັບຈ້າງຢູ່ທີ່ດິນຂອງຕົນ (primitive accumulation and proletarianization) ແລະ ຄວາມບໍ່ໝັ້ນຄົງ ຂອງຊີວິດ (precarity), ບົດຄົ້ນຄວ້ານີ້ ຊີ້ໃຫ້ເຫັນວ່າ ການຫຼຸດລົງ ຂອງອັດຕາຄວາມທຸກຍາກ ໂດຍອີງໃສ່ລາຍຮັບເປັນຕົ້ນຕໍ ຢູ່ຫຼາຍບ້ານທີ່ໄດ້ຮັບຜົນກະທົບນັ້ນ ບໍ່ໄດ້ໝາຍຄວາມວ່າ ຊາວບ້ານຈະມີຊີວິດການເປັນຢູ່ທີ່ດີຂຶ້ນ. ມີບາງກໍລະນີ, ປະຊາຊົນສູນເສຍທີ່ດິນໃຫ້ແກ່ໂຄງການລົງທຶນ ແຕ່ບໍ່ໄດ້ຮັບໂອກາດເຂົ້າເປັນແຮງງານຮັບຈ້າງ ແລະ ໃນຫຼາຍກໍລະນີ ຊາວບ້ານໄດ້ກາຍເປັນ ເຄິ່ງ-ແຮງງານຮັບຈ້າງ ໂດຍຢູ່ພາຍໃຕ້ເງື່ອນໄຂແບບຄວາມຈໍາເປັນ ແທນທີ່ຈະເປັນຍຸດທະສາດ ສໍາລັບຊີວິດການເປັນຢູ່ແບບຍືນຍົງ.

ເພື່ອຫຼີກລ້ຽງ ຜົນກະທົບດ້ານລົບ ຈາກ LSLAs ແລະ ຮັບປະກັນວ່າ ການລົງທຶນດັ່ງກ່າວ ປະກອບສ່ວນເຮັດໃຫ້ ການເຕີບໂຕດ້ານການຜະລິດກະສິກໍາແບບຍືນຍົງນັ້ນ, ຜົນໄດ້ຮັບຈາກການຄົ້ນຄວ້ານີ້ ສະທ້ອນເຖິງ ສີ່ບັນຫາທີ່ສໍາຄັນ ທີ່ຄວນຈະພິຈາລະນາ ໄດ້ແກ່:

ໜຶ່ງ, ຕ້ອງມີ ກົນໄກໃນການປະເມີນ ແລະ ຕິດຕາມ ຜົນກະທົບດ້ານສັງຄົມ ແລະ ສິ່ງແວດລ້ອມ ແບບຄົບຊຸດ ໂດຍຄໍານຶງເຖິງ ບັນດາຊັບພະຍາກອນທໍາມະຊາດອື່ນໆ ເຊັ່ນ: ເຄື່ອງປ່າຂອງດົງ, ໄມ້ທ່ອນ ແລະ ສັດປ່າ ແລະ ອື່ນໆ ແທນທີຈະເນັ້ນໃສ່ແຕ່ທີ່ດິນ ແລະ ລວມທັງການຈັດຕັ້ງປະຕິບັດ ບັນດາມາດຕະການທີ່ຈໍາເປັນ ແລະ ເໝາະສົມ. ພ້ອມກັນນັ້ນ ການປົກປ້ອງສິດທິການນໍາໃຊ້ທີ່ດິນ ແລະ ຊັບພະຍາກອນທໍາມະຊາດ ຂອງປະຊາຊົນ ຈຶ່ງເຫັນວ່າມີຄວາມສໍາຄັນຫຼາຍ ເນື່ອງຈາກວ່າ ຊັບພະຍາກອນທໍາມະຊາດ ຍັງມີບົດບາດສໍາຄັນຫຼາຍໃນການຮັບມືກັບ ເຫດສຸກເສີນ. ຊຶ່ງມັນຈະສາມາດຮັບປະກັນວ່າ ຊາວກະສິກອນ ໂດຍສະເພາະແມ່ນ ແມ່ຍິງ ແລະ ກຸ່ມສ່ຽງ ເຊັ່ນ: ກຸ່ມຊົນເຜົ່າສ່ວນນ້ອຍ ສາມາດສືບຕໍ່ການດໍາລົງຊີວິດ ທີ່ເຄີຍປະຕິບັດຜ່ານມາໄດ້ ໂດຍສະເພາະແມ່ນ ໃນຊ່ວງໄລຍະເວລາຂ້າມຜ່ານ.

ສອງ, ຜົນກະທົບດ້ານລົບຂອງການລົງທຶນມັກຈະເກີດຂຶ້ນ ໃນກໍລະນີທີ່ ຊາວບ້ານຍັງອາໄສຊັບພະຍາກອນທໍາມະຊາດ ໃນການດໍາລົງຊີວິດເປັນຕົ້ນຕໍ ເມື່ອທຽບໃສ່ ກໍລະນີ ທີ່ຊາວບ້ານໄດ້ຫັນໄປສູ່ຂະແໜງການອື່ນທີ່ບໍ່ແມ່ນການກະສິກໍາແລ້ວ. ສະນັ້ນ, ຈຶ່ງແນະນໍາວ່າ ຂະບວນການຕັດສິນໃຈ ຫຼື ວາງແຜນ ຄວນມີການພິຈາລະນາເຖິງ ຄວາມແຕກຕ່າງຂອງປະຊາຊົນ ຢູ່ໃນແຕ່ລະເຂດ.

ສາມ, ຫຼັກການ ກ່ຽວກັບ ຄວາມສອດຄ່ອງຂອງສາກົນ (Code of Conduct) ເຊັ່ນ: ການເຫັນດີ ເຫັນພ້ອມ ໂດຍມີການຕັດສິນໃຈຢ່າງອິດສະຫຼະ ແລະ ມີການແຈ້ງລ່ວງໜ້າ ຢ່າງດຽວ ແມ່ນບໍ່ສາມາດ ຮັບປະກັນຜົນໄດ້ຮັບທາງດ້ານບວກໄດ້ ແຕ່ມັນຕອບສະໜອງ ໂອກາດ ໃນ

ການປຶກສາຫາລື ແລະ ການເຈລະຈາໃຫ້ແກ່ຊຸມຊົນ. ສະນັ້ນ, ຫຼັກການເຫຼົ່ານີ້ ແມ່ນຄວນເປັນເຄື່ອງມືທີ່ສຳຄັນທີ່ນັກລົງທຶນຕ້ອງນຳໃຊ້ ແຕ່ບໍ່ຄວນຖືວ່າມັນເປັນທາງອອກ ສຳລັບການປົກປ້ອງຜົນກະທົບດ້ານສັງຄົມ.

ສຸດທ້າຍ, ເຫັນວ່າ ການສົ່ງ ເສີມການລົງທຶນໃສ່ທີ່ດິນ ເພື່ອເປັນເຄື່ອງມືໜຶ່ງ ໃນການຫຼຸດຜ່ອນຄວາມທຸກຍາກຢູ່ເຂດຊົນນະບົດ ໂດຍການຫັນຈາກ ການອາໄສຊັບພະຍາກອນທຳມະຊາດ ໄປສູ່ການເປັນແຮງງານຮັບຈ້າງ ແມ່ນມີປະສິດທິຜົນ ຖ້າຫາກມີ ບັນດາມາດຕະການທີ່ຈຳເປັນ. ສະນັ້ນ, ຈຶ່ງເຫັນວ່າ ລັດຖະບານ ຈະຕ້ອງໄດ້ພິຈາລະນາເລືອກ (trade-offs) ລະຫວ່າງ ເປົ້າໝາຍ ຂອງການພັດທະນາ - ຕົວຢ່າງ ໂຄງການລົງທຶນຂະໜາດໃຫຍ່ ແລະ ນຳໃຊ້ແຮງງານຄົນເປັນຫຼັກ ອາດບໍ່ປະກອບສ່ວນຫຼາຍປານໃດ ຕໍ່ກັບການເຕີບໂຕແຫ່ງຊາດ ແຕ່ມັນອາດສ້າງວຽກເຮັດງານທຳໄດ້ຫຼາຍກວ່າ.

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Part I: Background and Overview

1. Introduction

The expansion of global land-based investments for export-oriented agricultural production, often described as Large-Scale Land Acquisitions (LSLAs) or land deals, triggered by the 2007–2008 food, energy, and financial crises has been slowing since the early 2010s (Nolte et al., 2016). The fact is that investments in the agricultural sector are urgently needed to meet the increase in global demand for food and non-food agricultural commodities triggered by population growth and changing global consumption patterns (World Bank, 2008). There are claims that the vast land areas in the Global South cultivated by smallholders[1] are underproductive or underused (Cotula et al., 2009; Deininger & Byerlee, 2011). For this reason, granting underused land to (trans)national investors who are in a better position to access capital, technology and markets is seen as an alternative approach to boost national agricultural production and trade, thus contributing to food security and poverty reduction. The improved infrastructure, access to new markets and job opportunities accompanying these land-based investments have the potential to significantly contribute to improving the quality of life in rural areas (Deininger & Byerlee, 2011; Mirza et al., 2014; von Braun & Meinzen-Dick, 2009).

However, the anticipated development opportunities have not fully materialized, leading to the critique of global 'land grabbing' (Borras Jr, Franco, et al., 2012). The impacts of land deals have remained one of the main challenges for sustainable development in the Global South. LSLAs may impede the achievement of the 2030 Agenda for Sustainable Development and many Sustainable Development Goals (SDGs), particularly with regard to food security, employment as well as the reduction of poverty (Dell'Angelo et al., 2017). Accordingly, systematic assessments of the implications for local livelihoods are still critical for regulating the existing investments in an effort to achieve sustainability (Borras Jr & Franco, 2012; Margulis et al., 2013). These investments directly affect local access to resources, the environment and human well-being in targeted areas, mainly through the transformation of land-use systems, labour relations and rural livelihoods (Cotula et al., 2009; Dell'Angelo et al., 2017; Nolte et al., 2016; Schoneveld, 2017).

Land-based investments have been criticized as processes that the government and transnational investors from advanced economic countries use to control the best land and associated resources for their immediate and future benefits rather than as development potential in the Global South (Borras Jr & Franco, 2012; De Schutter, 2011; D. Hall, 2013). In some cases, land-based investments do not involve the acquisition of farmland from smallholders (R. Hall, 2011), but rather, common resources such as forests. Haller, Käser and Ngutu describe this as 'resilience grabbing' (2020, p. 2). The common resources play an essential role in rural livelihoods; as smallholders still rely heavily on them, forests, for example, are the primary source for food and income, particularly during stressful times (Angelsen et al., 2014; G. M. Hickey et al., 2016). Furthermore, land-based investments are seen as a 'risky business' (Li, 2015), and they do not bring sufficient benefits to any of the actors involved, including the investors, the governments of the host countries, or the smallholders (Baird, 2020). While these investments may play an important role in improving food security or securing non-food agricultural commodity supply for the investors' countries or the global supply chain (GRAIN, 2008, 2016), they threaten smallholders' livelihoods through the expropriation of farmland and associated resources (e.g. forests, pastures and water) which play important roles in food security, cash income and other ecosystem services in rural areas (Ahmed et al., 2018; D'Odorico et al., 2017; D. Hall, 2013). Additionally, the

[1] Refers to local people who mainly rely on land and other natural resources for living, including agricultural production, collecting forest products, wage-labourers, and non-farm activities in the villages affected by land deals. The terms "smallholders", "peasants", "villagers", "former land users" and "local people" are used interchangeably in this thesis.

environmental effects, such as increased pollution triggered by land deals, may have mid- or long-term effects on human well-being in the targeted areas (Friis & Nielsen, 2016; Lazarus, 2014).

Recently, the global debate on land-based investments has shifted to searching for appropriate measures to regulate and move these investments towards sustainable agricultural investments in the Global South (see Debonne et al., 2019; Margulis et al., 2013). Governing global land-based investments is a challenge for government in the host countries as it is a complex process involving the interests and actions of diverse actors (Margulis et al., 2013; Wolford et al., 2013). In the midst of actors' conflicts of interests, there is a need to negotiate trade-offs to achieve sustainable development goals (Meyfroidt, 2018; Pham-Truffert et al., 2020). To this end, robust evidence from systematic research is needed for better-informed national policies related to land-based investments (Borras Jr, Franco, et al., 2012): quantitative and qualitative variables relating to the characteristics of land deals, their implementation processes and impacts, as well as socio-ecological contexts of targeted areas should be taken into account in the analysis to better characterize and contextualize the impacts of land deals (Messerli et al., 2014; Oya, 2013). Due to the limited availability of reliable data in many countries, most of the previous global analyses on the impact of land-based investments have depended on local case studies (e.g. Baird, 2011; Baumgartner et al., 2015; Bottazzi et al., 2018) and regional or global inventories (e.g. Davis et al., 2014; Rulli & D'Odorico, 2014). The case study approach may be suitable for gaining insights into a particular experience (Beach & Pedersen, 2016), but is insufficient for identifying generalised patterns (Magliocca et al., 2018). At the same time, although regional and global inventories e.g. Land Matrix database which is the single and most comprehensive inventory (Land Matrix, 2021) provide important knowledge regarding to key patterns of LSLAs globally, they cannot capture the complete picture of land-based investment implementation on the ground because those inventories are mainly based on crowdsourcing (Messerli et al., 2015; Oya, 2013; Zoomers et al., 2016). Moreover, previous assessments of the implications of land deals have mainly considered the areas granted to the land deals instead of the actual developed areas, and thus may not be good indicators in capturing the real impacts experienced (Oya, 2013; Scoones et al., 2013; Zoomers et al., 2016).

My research aims to understand the processes through which land-based investments transform the natural resource and labour relations that impact human well-being in the affected villages. I do this through a meso-level analysis of the Lao PDR's most recent national land concession inventory. The inventory includes unique spatio-temporal statistics and qualitative variables on the characteristics, implementation processes and impacts for a wide range of land-based investments. They include all sizes, from small- and medium- to large-scale deals, as well as investments in diverse commodities. As these data are available across socio-ecological contexts, they constitute an excellent, unique case for bridging the gaps in our current knowledge. Spatio-temporal statistics allow analysis of the contexts and characteristics of the impacts of land-based investments, and the identification of explanatory factors that either enable or hinder human well-being outcomes in the affected villages.

The thesis is structured into two parts. Part I includes an overview of my research publications, overall concepts, the study context of land-based investments in the Lao PDR, the research approach and methodology, key insights, synthesis and outlooks. Part II consists of four publications including one book and three peer-reviewed papers on trends and contexts for land-based investments in the Lao PDR and their impacts on poverty and human well-being, as well as rural transformation from the natural resource- to wage-based livelihoods in the context of land deals.

2. Overview of Research Publications

This thesis consists of four publications: one book comprising a national land concession inventory in the Lao PDR that I co-authored (hereafter called the LCI Book) and three peer-reviewed articles (Papers I, II and III), of which two papers have been published and one is under review on the date of my thesis submission. The LCI

book drew from an integrated analysis of the national dataset for land concessions inventory and a subset of assessments for the quality of investment with other national socio-economic and environmental datasets. I was one of the key researchers who co-designed the approach, processes and tools for the inventory and the assessment of the quality of investments. Furthermore, I took the lead in coordinating data collection in the field and played the main role in data analysis and finalizing the manuscript. The LCI book provides overall trends and socio-ecological contexts for land-based investments in the Lao PDR, and the initial impacts of deforestation, chemical pollution, food security and rural employment. Additionally, it presents the results of rating scores relating to the quality of investments based on multiple dimensions such as environmental, economic and social impacts along with legal compliance. This initial analysis pointed to key areas for further analysis, some of which were addressed by Papers I, II and III accordingly. Paper I analysed poverty trends in the villages affected by land-based investments which were derived from a monetary approach. Paper II investigated multi-dimensional poverty through the human well-being framework in villages affected by land-based investments, and Paper III explicitly examined the most important and immediate benefits gained from land-based investments that smallholders in the targeted regions can enjoy. It explores the contextual factors that influenced job creation and the degree to which peasants' engagement in wage-labour took place within land-based investments. Finally, it also characterizes and contextualizes the quality of jobs offered to or accepted by peasants.

Table 1: Overview of publications constituting the core of the thesis structured according to research objectives in Section 5

No.	Title	Authors	Publisher/peer-reviewed journal	Current state
Characteristics, socio-ecological contexts and trends of land-based investments				
I	LCI Book titled '*Land leases and concessions in the Lao PDR: A characterization of investments in land and their impacts*'	Hett, C., **Nanhthavong, V**., Hanephom, S., Phommachanh, A., Sidavong, B., Phouangphet, K., … Epprecht, E.	Centre for Development and Environment (CDE), University of Bern, Switzerland. Bern Open Publishing, 150 pp. ISBN (print): 978-3-906813-95-0	Published (2020)
Human well-being in targeted villages				
II	Paper I. Poverty trends in villages affected by land-based investments in rural Laos	**Nanhthavong, V**., Epprecht, E., Hett, C., Zähringer, J.G., Messerli, P.	*Applied Geography*, Volume 124, 102298	Published (2020)
III	Paper II. Pathways to human well-being in the context of land acquisitions in the Lao PDR	**Nanhthavong, V**., Oberlack, C., Hett, C., Messerli, P., Epprecht, E.	*Global Environmental Change,* Volume 68, 102252	Published (2021)
Contribution of land-based investments to transformation from the natural resource- to wage-based livelihoods				
IV	Paper III. Land-based investments for agricultural commercialization in the Lao PDR: improving rural employment or opening doors to precarization?	**Nanhthavong, V**., Bieri, S., Nguyen, A., Hett, C., Epprecht, E.	World Development	Under review (2021)

3. Overall Conceptual Background

The lens of the overall aim of the thesis is to test the two contested propositions on land-based investments in the Global South. On the one hand, land-based investments are seen as a shortcut for growth, rural development and poverty reduction (Deininger & Byerlee, 2011). In a second, competing proposition, these investments are

criticised as a process through which transnational investors from capital-rich countries rush to control land and its associated resources in developing countries for their future benefits (Borras Jr, Franco, et al., 2012; De Schutter, 2011; D. Hall, 2013). To this end, I developed the two following conceptualizations of land-based investments in which to ground the arguments throughout the thesis.

3.1. New Institutional Economics

The New Institutional Economics (NIE) sees land-based investments as a development process guided by state facilitation. The governments in the host and investors' countries promote private investments in land through the granting of land-use rights for long-term leases or concession contracts. At the same time, they mobilize cheap labour for trans(national) actors who are in a better position in terms of access to market, capital and technology to invest in the agricultural sector (Cotula et al., 2009; De Schutter, 2011; Deininger & Byerlee, 2011).

The NIE theory described by North (1990, 1995) suggests that economic performance is shaped by the interaction between economic organizations and institutions including formal rules (e.g. laws and regulations) and informal constraints (e.g. social norms; see also Richter, 2005). In other words, to make the economy perform well, rules are required to govern the interactions between economic and non-economic organizations (Khan, 2017). The NIE offers an alternative framework for 'market imperfections' or 'market failures' in neo-classical economics (Bates, 1995; Krul, 2018). Additionally, it provides a set of tools by which to study development in the Global South (Harriss et al., 1995) towards the identification of guidelines for policy intervention (Toye, 1995).

In this thesis, I engage the theoretical framework offered by the World Bank (Deininger & Byerlee, 2011; World Bank, 2008). In the context of land-abundant countries with low agricultural productivity, food insecurity and high poverty rates, the transformation of agricultural production through capital and technology investments is an essential and urgent need in order to stimulate economic growth and poverty reduction. Land use by smallholders and agricultural labour in the Global South is considered inefficient and is seen as the cause of surplus population. For this reason, smallholder agriculture will not enable a country to meet the potential surplus yields needed to feed the growing population and lift the smallholders out of poverty (World Bank, 2008). In this regard, land-based investments by trans(national) investors are seen as an alternative approach to close the yield gaps by boosting national agricultural production and trade, improving food security and contributing to poverty reduction. At the same time, the investments' spillovers such as employment creation, increased access to markets, inputs, new technology and improved infrastructure will contribute to improving the quality of life in rural areas. Furthermore, land-based investments could be a pathway to release a surplus labour force from agriculture to non-agricultural sectors that offer higher and more stable income (Deininger & Byerlee, 2011; McCaig & Pavcnik, 2013; Mirza et al., 2014). To this end, the state plays an important role to attract and facilitate the investments through creating public policies such as providing low tax or tax free incentives and assigning property rights to trans(national) investors to secure their capital input (Cotula et al., 2009; De Schutter, 2011; Martin-Prével, 2014).

There are three main pathways that land-based investments can contribute to improving human well-being and poverty reduction in targeted areas. First, there is the smallholder commercialization of agriculture stimulated by land-based investment spillovers such as increased access to markets and new technology. The smallholders can potentially diversify their production to a high-value crop for market, e.g. through outgrower schemes. Second, they may foster wage-labourers within land-based investments. The expansion of commercial agricultural production, especially the large-scale land-based investments, can increase the labour demand. The demand for labour is expected to increase wages. Third, there is the migration out of agriculture to sectors that offer higher and more stable wages. For instance, the agricultural production under trans(national) investors

could shift to capital intensity, thus releasing the surplus labour from agriculture to manufacturing and the service sectors (Deininger & Byerlee, 2011; McCaig & Pavcnik, 2013; World Bank, 2008).

The institutional frameworks in host countries are often weak or lack enforcement (Anseeuw et al., 2012; Deininger & Byerlee, 2012). In this regard, a Code of Conduct (CoC) introduced by international organizations such as the FAO is believed to be an important instrument to govern land-based investments towards sustainable outcomes (Titche, 2017; von Braun & Meinzen-Dick, 2009). The most important CoC comprise the FAO Voluntary Guidelines on the Responsible Governance of Tenure of Land, Fisheries and Forests in the Context of National Food Security (FAO, 2012), the Responsible Agriculture Investment Principles (FAO et al., 2010), and the Free, Prior and Informed Consent (FPIC) (FAO, 2014). The commons key aspects of these guidelines include: (i) the use of transparency in negotiations including the consultation and seeking of consent in regard to the FPIC principles from the former land users; (ii) respect for existing rights including customary rights to land and natural resources (land loss should be adequately compensated and the former land users rehabilitated to a livelihood status comparable to that prior to investment); (iii) benefit-sharing through numerous ways such as cash compensation from the revenue stream and outgrower schemes; (iv) environmental sustainability including an adequate impact assessment and monitoring to ensure no harm to soil quality or flora and fauna, limited greenhouse gas emissions and an avoidance of overconsumption for water resources; and (v) an adherence to national trade policies such as when national food security is at risk, particularly in a crisis, e.g. an acute drought: investors should not have the right to export. Instead, they should prioritize the domestic food supply (Borras & Franco, 2010; von Braun & Meinzen-Dick, 2009).

3.2. Land Grabs

In contrast to the NIE, the conceptual lens of land grabs offers a framework for characterizing the processes through which (trans)national actors control land and associated resources and other means of production such as labour for capitalist accumulation in the Global South, and the potential impacts on human well-being in targeted areas (Borras Jr, Kay, et al., 2012; R. Hall, 2011). Land grabbing is a contested concept that has been used by media, governments, international development organizations, NGOs and scholars to describe the dramatic expansion of large-scale investments in land by (trans)national investors in the Global South since the 2007-2008 food, energy, and financial crises (Borras Jr, Kay, et al., 2012). The definitions of land grabs are diverse. For instance, the International Land Coalition (ILC)'s Tirana Declaration defines land grabbing as:

> [A]cquisitions or concessions that are one or more of the following: (i) in violation of human rights, particularly the equal rights of women; (ii) not based on free, prior and informed consent of the affected land-users; (iii) not based on a thorough assessment, or are in disregard of social, economic and environmental impacts, including the way they are gendered; (iv) not based on transparent contracts that specify clear and binding commitments about activities, employment and benefits sharing, and; (v) not based on effective democratic planning, independent oversight and meaningful participation (ILC, 2011, para. 10).

Rulli et al. (2013, p. 1) define land grabs as 'the transfer of the right to own or use the land from local communities to foreign investors through large-scale land acquisitions (more than 200 ha per deal)'. The FAO defines land grabbing as land-based investments with three characteristics: large-scale land acquisition, the involvement of foreign government(s) and negative impacts on food security in the host countries (Borras Jr, Franco, et al., 2012). Land grabbing is not new—it has been taking place since the colonial period. However, contemporary land grabbing is considered a form of neo-colonialism in response to the 2007-2008 global crises. The difference between the former and contemporary land grabbing relates to their scale and pace. The contemporary processes occur at a higher pace due to facilitation by the governments of the host countries (Borras Jr, Kay, et al., 2012; Cotula et al., 2009; R. Hall, 2011; Robertson & Pinstrup-Andersen, 2010).

In this thesis, I utilize the definition given by Borras Jr, Kay, et al. (2012) :

> Contemporary land grabbing is the capturing of control of relatively vast tracts of land and other natural resources through a variety of mechanisms and forms involving large-scale capital that often shifts resource use to that of extraction, whether for international or domestic purposes, as capital's response to the convergence of food, energy and financial crises, climate change mitigation imperatives and demands for resources from newer hubs of global capital (p. 405).

Land grabbing has numerous forms, but it is mainly carried out through long-term leasing or concessions rather than purchases by foreign companies and governments (Cotula et al., 2009). Land grabbing features three interlinked elements: First, domestic and foreign actors seek to control land and associated resources such as water and other key means of production, e.g. labour, for their future benefit (Borras Jr, Kay, et al., 2012). These processes often involve accumulation through the dispossession of land and associated resources from peasants (Hall, 2013; Hall et al., 2015). Nevertheless, land grabs do not necessarily expel former users from their land (Borras Jr, Franco, et al., 2012). Second, the scale of land grabs is a key marker. Generally, land grabbing refers to a land-based investment that acquires a large parcel of land, usually over 200 ha (Nolte et al., 2016) or 1,000 ha (Cotula et al., 2009) for agro-industry, such as export-oriented agricultural production. However, land grabs are not limited to the amount of land acquired; the term is related to the scale of invested capital (Borras Jr, Kay, et al., 2012). Recent evidence has revealed that many investments involve high capital intensity in smaller plots. However, they also result in significant impacts on the local environment and livelihoods (Friis & Nielsen, 2016; Xu, 2018). Third, land grabs involve acquiring land for diverse purposes including agricultural production, mining extraction, infrastructure development, and conservation in response to global food, energy and financial crises; population growth; the shift in consumption patterns and climate change (Borras Jr, Kay et al., 2012). In this thesis, I focus on land-based investments for agricultural purposes only.

4. Study Context

4.1. Socio-Economic Development in the Lao PDR

Despite having a low population density and being rich in natural resources such as land, forests and water and mineral deposits, the Lao PDR remains one of the least developed countries in the region. Although the Lao PDR has been one of the countries with a record of strong economic growth in the region over the last decades (World Bank, 2017), a large share of the population still lives in rural areas with a low living standard, mainly relying on smallholder agricultural production and collecting forest resources as their main livelihoods (Lao Statistics Bureau (LSB), 2016; Martin & Lorenzen, 2016; Nanhthavong, 2017). In other words, the recent strong economic growth in the Lao PDR has been heavily driven by the export of unprocessed natural resources including minerals, timber, agricultural commodities and energy from hydropower and has not significantly contributed to social development in terms of improving human well-being and poverty reduction in rural areas (Alston, 2019; World Bank, 2015, 2018b). The Lao PDR has made good progress over the past decades with the national poverty level declining significantly from 34.7 to 24.5% between 2005 and 2015; however, the inequality, especially between rural and urban areas, has increased over this period (Coulombe et al., 2016; Epprecht et al., 2018).

At the same time, due to the extraction of exhaustible natural resources and inadequate environmental safeguards, the Lao PDR is facing alarming rates of resource degradation and environmental contamination (Friis & Nielsen, 2016; Koch, 2017; Open Development Initiative (OPI), 2018). Recognizing the current pattern of unsustainable and noninclusive growth which is driven by natural resource extraction, the development strategy of the Government of the Lao PDR (GoL) has shifted towards green and inclusive growth. The GoL has expressed the need to move to the non-resource sectors such as high-value agricultural production, manufacturing and tourism which can potentially bring more significant benefits to poor people (Ministry of

Planning and Investment (MPI), 2016). However, the Lao PDR faces a big challenge in moving development away from raw resource exploitation to the industry and manufacturing sectors. This is mainly hampered by geographical constraints such as being landlocked and lacking the necessary soft and hard infrastructure to integrate into the global production chain (Nishimura et al., 2016), as well as the lack of a skilled labour force (World Bank, 2014).

Agriculture in the Lao PRD is mostly carried out through smallholder production which is mainly for self-consumption. It features high labour intensity with low productivity due to limited access to technology and markets (Ministry of Agriculture and Forestry (MAF), 2014; Nanhthavong, 2017). Two development pathways have been strongly promoted by the GoL over the last two decades. First is the commercialization of agriculture by smallholders and private actors. In the GoL's view, commercial agricultural production may be a shortcut to boosting national agricultural exports. At the same time, smallholders will not only earn higher incomes directly from the production, but they will also benefit from off-farm employment opportunities created by commercial production, especially the large-scale farms developed by private actors (GoL, 2004; MAF, 2010). Second, the promotion of de-agriculturalization means encouraging smallholders to engage in non-farm activities. It is expected that non-farm jobs created by commercial agricultural production or migration to higher-paid jobs in the city will secure a higher income compared to standard-practice agriculture (MPI, 2016).

4.2. Promoting Land-based Investment Development as an Alternative Rural Development Strategy in the Lao PDR

The Lao PDR is situated in the middle of newly emerging economy countries with high population densities and resource-scarcities including China, Thailand and Vietnam (Hofman & Ho, 2012; Schönweger & Üllenberg, 2009). This has pushed the Lao PDR to become one of the main destinations for global land-based investments for agricultural production. These investments are pushed by combined global drivers and GoL national policies (Fox & Castella, 2013; GoL, 2004; Shi, 2008). Over the last two decades, a large part of the rural landscape has changed significantly: traditional land usage is being replaced by commercial agricultural production, mineral extraction, hydropower development and other kinds of infrastructure development by trans(national) investors (Schönweger et al., 2012). The same report revealed that approximately 1.1 million hectares (roughly 5% of the Lao PDR territory) were granted in land deals to domestic and foreign investors.

Land-based investments in the Lao PDR are mainly driven by foreign investments from its neighbouring advanced-economy countries including China, Vietnam and Thailand. The investments are typically small-scale, and most of them are smaller than five hectares (Schönweger et al., 2012), compared to the land deals that global analyses emphasize – greater than 200 ha per deal (Nolte et al., 2016). A large proportion of the areas under land-based investment for agricultural purposes are for rubber and pulpwood, flex crops such as sugar cane and cassava, and large livestock (cattle) production (Schönweger et al., 2012). The dramatic expansion of land deals by domestic and foreign investors across the Lao PDR since 2004-2005 has been pushed by two national policies: national economic liberalization in the mid-1980s, and turning land into capital in the mid-2000s (GoL, 2004; Kenney-lazar et al., 2018).

4.3. Policy Discourse on the Governance of Land-based Investments in the Lao PDR

The anticipated benefits that the GoL has for land-based investments are enormous. These include an avenue for national income generation through revenues, and an alternative approach for rural development through spillovers, e.g. infrastructure development, increased access to markets and new technology, and employment creation in rural areas (GoL, 2004). To ensure land-based investments make a significant contribution to rural development and poverty eradication, the GoL strongly encourages land-based investments in more remote areas through lower tax incentives (GoL, 2016). The national regulations specify that only state land classified as so-called "empty" or "degraded forest" can legitimately be granted as land-based investments through leases

or concessions (GoL, 2007a, 2009b). From the GoL's perspective, granting empty land to these investments will enable the country to meet national strategic goals such as boosting agricultural productivity and increasing national forest cover in the case of tree plantations. At the same time, this can mitigate the adverse impacts of land-based investments on local livelihoods due to dispossession.

Although land-based investments have become the main source of national income over the last decade (World Bank, 2017), they bring numerous challenges to rural development in the Lao PDR, especially their adverse impacts on natural resources, pollution due to the poor management of chemicals, and the increase in the vulnerability of local livelihoods (Baird, 2011; Friis & Nielsen, 2016; Kenney-Lazar, 2012). Improving human well-being in rural areas through wage-labour with land-based investments is still questionable; local people are often not able to engage in job opportunities with these investments due to their lack of required labour skills (World Bank, 2014). Another challenge is the widespread augmentation of land-based investments since the mid-2000s which hinders the GoL's capacity to keep track of the existing investments. This is partly due to many sectors across administrative levels having mandates to approve and manage the land deals in the country, thus resulting in weak governance, poor law enforcement and a lack of capacity in the natural resource sector (Dwyer, 2017; Kenney-Lazar, 2015). Moreover, accommodating and managing the diverse land-based investments is a real challenge because there are multiple actors and stakeholders involved.

Recognizing both the challenges and the potential of land-based investments for growth and rural development, the GoL has issued several moratoria since 2007 (e.g. GoL, 2007b, 2018a, 2018b). The most important was Prime Minister's Order Number 13, issued in 2012 (GoL, 2012). In this moratorium, the GoL ordered the suspension of land granting to new investments for tree plantations, which is the most attractive commodity under the framework of land-based investments for agricultural purposes in the Lao PDR, and of some large-scale mineral activities. At the same time, the GoL called for a systematic assessment of the quality of investment of the existing concessions throughout the country. The ultimate goal of the moratorium is twofold: First, the so-called "good" and "bad" investments should be identified. From the GoL's perspective, the good investments that should be promoted refer to those that bring economic benefits to both the national economy and smallholders in the targeted regions without severe environmental impacts. And, the concession agreement of a bad investment which has adverse impacts that outweigh the development opportunities should be terminated. Second, appropriate measures should be identified for better regulation of the existing and future land-based investments in order to achieve sustainable development.

Several laws and regulations relating to land-based investment development, including guidance for implementation, land lease fees, taxes and loyalties, and environmental safeguards, have been improved since 2009 (GoL, 2009b, 2009a, 2016). However, these days, the GoL has a dilemma – whether to resume the national policy of turning land into capital or to extend the moratorium. Due to the lack of systematic evidence on the ground, in 2018 the GoL continued the suspension of new investments in tree plantations and some large-scale mineral activities (GoL, 2018b, 2018a). However, with the drop in foreign investment in resource sectors since the early 2010s, the Lao PDR has faced a financial dearth (Vientiane Times (VT), 2019). In this regard, the GoL has made a marked effort to improve the investment climate to attract good investors (Boulom, 2020; IFC, 2021; Times Reporters, 2020). However, it is very challenging for the GoL to attract good investment since currently, the Lao PDR is still ranked 154th out of 190 countries in relation to the ease of doing business (World Bank, 2020). Furthermore, the Lao PDR is perceived as a country with a weak governance system (World Bank, 2018a) and a high degree of corruption (Transparency International, 2019).

5. Research Objectives and Questions

My PhD thesis addresses the following three main objectives and key research questions:

Objective 1: To understand the trends in and contexts of land-based investments for agricultural production in the Lao PDR since the early 2000s.

1. What are the characteristics and socio-ecological contexts of land-based investments for agricultural production in the Lao PDR?
2. How have land-based investments for agricultural production in the Lao PDR changed over time in terms of type, size, implementation and socio-ecological contexts?

I addressed these research questions in the LCI book, *Land leases and concessions in the Lao PDR: A characterization of investments in land and their impacts*.

Objective 2: To characterize and contextualize the impacts of land-based investments on human well-being in targeted areas.

1. What have been the poverty trends since the establishment of land-based investments in the affected villages?
2. How do land-based investments affect human well-being in the affected villages?
3. How do land-based investments contribute to transforming the natural resource- to wage-based livelihoods in rural Lao areas?

I answered the first research question in my first published paper on, 'Poverty trends in villages affected by land-based investments in rural Laos'. The second question was addressed by the published Paper II, 'Pathways to human well-being in the context of land acquisitions in the Lao PDR'. Finally, the third question was addressed in the submitted manuscript on 'Land-based investments for agricultural commercialization in the Lao PDR: improving rural employment or opening doors to precarization?'

Objective 3: To identify pathways to enhanced well-being and poverty reduction in the affected villages.

1. In which contexts are villagers affected by land-based investments able to engage in new development opportunities created by these investments and improve their well-being?
2. What are the key contextual factors that enable and hinder villagers in the targeted areas to improve their well-being?

All three peer-reviewed papers, I, II and III address contextual factors that influence poverty reduction and increase well-being outcomes and peasant engagement in wage-labour in the context of land-based investments. However, the research questions in this objective have only been fully addressed through the synthesis of the three papers, as described in Section 8 of this thesis.

6. Methodology

6.1. Embedding of the Dissertation Research

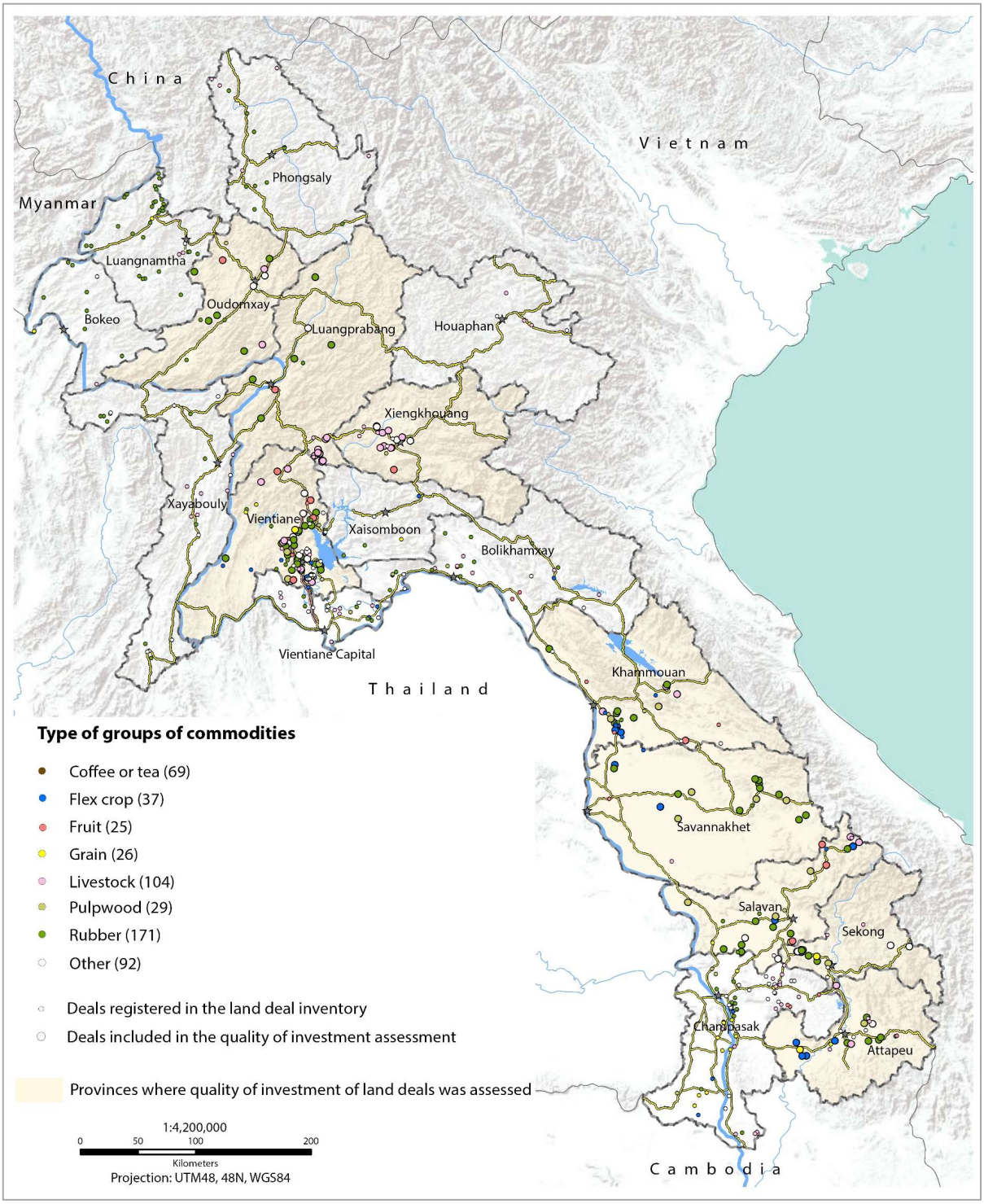
My research was embedded in a component of the Lao DECIDE info project, subsequently known as the Lao PDR Knowledge for Development (Lao K4D) project. My research was also associated with the Swiss

Programme for Research on Global Issues for Development (R4D), Managing Telecoupled Landscapes for the Sustainable Provision of Ecosystem Services and Poverty Alleviation. The former project is a collaboration between the GoL and the Government of Switzerland through the Swiss Agency for Cooperation and Development (SDC) in the Mekong Region. The Centre for Development and Environment (CDE), University of Bern, Switzerland has been mandated to implement the project (see Hett et al., 2018). Building upon the success of the Lao DECIDE information project that ended in mid-2018, the Lao K4D project aims to support the GoL to make the best use of available data for evidence-based decision making. The project supports the analysis of the existing national datasets and policy dialogues, and the development and management of new datasets relating to socio-economic criteria, agricultural production, and the environment in the Lao PDR. The national land concession inventory is one of the important national datasets (see www.decide.la). I am one of the main researchers who has played a significant role in designing the research approach and tools for assessment, leading the data integration, managing and coordinating the field work, and co-leading the data analysis.

The latter project was an inter- and trans-disciplinary research for development project embedded in Land System Science. It focused on transformations of socio-ecological systems and the complex ecological and social interactions. The project, executed in the Lao PDR, Madagascar and Myanmar, was a collaboration between the CDE, University of Bern, the University of Antananarivo, Madagascar through the School of Agronomy, the National University of the Lao PDR, the Environmental Care and Community Security Institution, Myanmar, as well as the Planning of Landscape and Urban Systems unit of the Swiss Federal Institute of Technology in Zürich and the Policy Analysis and Environmental Governance unit of the Institute of Political Science, University of Bern with the CDE as the lead. The project was funded by the Swiss National Science Foundation (SNSF) (see www.telecoupling.unibe.ch/the_project/).

6.2. Research Approach

Despite the recent growth of literature on the impacts of land-based investments on local environments and livelihoods, a systematic analysis is still lacking. Analyses that combine qualitative and qualitative variables have become increasingly recognized as a favoured alternative approach to capture a more complete picture of the impacts of land-based investments. Further, such an analysis can serve as robust evidence to inform the policies relating to land deals in the Global South (Edelman, 2013; Messerli et al., 2015; Oya, 2013; Zoomers et al., 2016). For this reason, my research applied a mixed-method approach (Creswell, 2015) to investigate the impacts of land-based investments on human well-being at the village level. The research was conducted through two main steps: First, the key spatio-temporal data relating to the main characteristics of land-based investments was collected through an inventory of all the land-based investments in the agricultural, mining and hydropower subsectors in the Lao PDR. However, I only used the land deals for agricultural purposes in order to carry out my PhD analysis. Second, based upon the results of the first step, a survey was conducted to collect key qualitative variables relating to the implementation processes of land-based investments and their impacts on the local environment and livelihoods. The nature and implementation processes of land-based investments in the Lao PDR are quite similar in a single geographical region, but differ across regions. In this regard, nine Lao provinces, consisting of three each in the northern (Oudomxai, Luang Prabang and Xieng Khouang), central (Vientiane province, Khammouan and Savannakhet) and southern (Attapeu, Sekong and Saravan) regions were purposely selected to represent specific land-based investment contexts in the Lao PDR (Hett et al., 2018): The northern provinces reflect small-scale investments mainly driven by Chinese investors, while the southern ones represent large-scale investments mainly driven by Vietnamese investors. The selected central provinces correspond to a mix of small- and large-scale land-based investments by investors from multiple countries, including Thailand, China and Vietnam as well as domestic actors.



Source: LCI Book (Hett et al., 2020). Figure reproduced by author

Figure 1: Overview of geographical concentration of land-based investments and selected land deals for the in-depth study in nine provinces

6.3. Data

The comprehensive datasets at the national level, especially on land-based investments consisting of spatio-temporal statistics and human well-being impact variables, are not usually available in most countries (Zoomers

et al., 2016). The Lao PDR may be among the few countries with an availability of high-quality and reliable datasets on land-based investments at this scale. My research has mainly analysed the national government-owned dataset for the State Land Lease and Concession Inventory (LCI), which was compiled through the Lao DECIDE info project. Additionally, the LCI was integrated with other national socio-economic datasets, particularly poverty incidence, as described in the following sections.

6.3.1. Inventory of Land Concessions in the Lao PDR

The LCI was carried out in all 18 provinces over the 2014-2017 period, but data collection in most provinces was conducted between 2016 and 2017. The LCI was an inter-ministerial collaboration initiative between the Ministries of Natural Resources and Environment (MoNRE), MPI, MAF, and Energy and Mines (MEM) with the technical support of the CDE. The approach, database system and data collection tools were designed through collaboration between the CDE and government partners as well as consultations with external experts in this field. National and sub-national governmental staff were trained by CDE experts to gather the data across the various administrative levels. The inventory team consisted of representatives from MoNRE, MPI, MAF, and MEM, and one team spent between three and four weeks in the field to complete the inventory for a single province (for more information please see Hett et al., 2018). The inventory cross-checked the existing database from the 2010 inventory (see Schönweger et al., 2012) with the sectoral databases at the national, provincial, and district levels. The inventory teams collected key variables such as statistics relating to land-based investments including types of investments, origins of investors, size, year of approval, implementation status, legal project documents and spatial data. Different types of areas were surveyed such as granted, allocated, and developed. The inventory covered the investments for agricultural, tree plantation, mining, and hydropower development purposes. The polygons for developed areas in a concession were delineated through participatory mapping at the district level using high-resolution orthophotos and satellite imagery (Hett et al., 2018).

6.3.2. Assessment of the Quality of Investment in Selected Provinces

A subset of the LCI was referred to as the assessment of the quality of investment (QI) which collected key qualitative variables relating to the impact of land-based investments including environmental, economic and social aspects, as well as legal compliance in the implementation process. The QI was a sample-based dataset assessing 296 land-based investments for the agricultural and mining sectors in nine provinces as described in 6.3.1. The QI utilized an interview-based approach, for which the CDE provided technical support to the GoL in designing the approach and questionnaires. In addition, the CDE trained the technical staff at the national and provincial levels to conduct interviews with different stakeholders at the district and village levels. The interviews were conducted with representatives of companies, government authorities and villagers in affected villages. The interviews with villagers were group interviews that were split into two groups for separate interviews: (i) interviews with the village committees including the chiefs of the villages, village foresters, person who is in charge of village's land issues, representatives of the village elders, the Lao Women's Union and the Lao Youth Union; and (ii) interviews with selected households consisting of those that experienced land loss, households with a family member employed as a wage-labourer within a land-based investment, households without land loss, and non-family members employed as wage-labourers. There were around 10 to 12 persons present at each interview with the selected households. The chief of the sampled villages was asked to select the representative households and make appointments for the interviews. The teams spent around 1–1.5 hours for each interview session.

Only land-based investments with a granted area greater than 10 ha for agricultural purposes and five ha for mining activities, meaning those in the start-up and operational phases were selected for the QI. In the Lao PDR, land-based investments, especially the medium- and large-scale ones, often affect multiple villages, but only 30% of the total affected villages were sampled for the QI. The sampling was through a strata sampling approach

that included villages with few impacts and those with many in terms of the extent of land dispossession and population density (Hett et al., 2018).

To minimize the systematic errors and the amount of time for data entry, the questionnaires were designed in a tablet-based format. The responses were entered into the forms on the tablets and submitted to the server immediately after the interview (see Hett et al., 2018).

6.3.3. Poverty Data

The poverty data was based on results from poverty analyses in 2005 (Epprecht et al. 2008) and 2015 (Coulombe et al., 2016). Poverty was measured using a monetary approach with the poverty line set by net income per person per month; this incorporated per capita expenditure (including the value of home production) needed to purchase 2,100 Kcal per person per day, and non-food items as a proxy (Epprecht et al., 2008). The 2005 poverty rate[2] at the village level was estimated based on data from the 2002-2003 Lao Expenditure and Consumption Survey (LECS) (see NSC 2004) and the 2005 Population and Housing Census (PHC) (GoL 2006). The 2015 poverty rate was calculated based on data from the 2012-2013 LECS (see Pimhidzai et al. 2014) and the 2015 PHC (see Coulombe et al. 2016).

6.4. Data Analysis

6.4.1. Characterization and Contextualization of the Trends of Land-based Investments and Their Initial Impacts

This chapter describes key methods used to accomplish research Objective 1. It primarily analyses the LCI data overlayed with other national socio-economic, environmental and GIS datasets such as poverty incidence, forest cover (conservation, protection and production), and agro-ecological conditions using ArcGIS (ESRI, 2011). The results are presented in the book, *Land Leases and Concessions in the Lao PDR: A Characterization of Investments in Land and Their Impacts* (the LCI book). The analysis describes the trends which characterized and contextualized land-based investments in the Lao PDR, aggregated by types, size, phase of operation, and agro-ecological and socio-economic contexts. Furthermore, for this chapter, we also conducted an initial impact assessment of land-based investments covering deforestation, agro-chemical environmental effects, e.g. pollution from chemicals, food security, and employment. The analysis on these aspects was conducted through a spatio-temporal descriptive statistic and GIS and qualitative approaches.

In addition to the initial impacts of land-based investments, the Rating System using the Investment Quality Index (IQI) was developed to assess the overall performance of land-based investments. The IQI was composed of multiple dimensions relating to the quality of investment including: (i) environmental impacts examined whether or not a proper environmental impact assessment (EIA) and adequate monitoring were conducted, types of forest cleared by land deals, and the use and management of chemicals including their impacts, pollution and impact on livestock; (ii) economic impacts investigated land dispossession and compensation, fees and royalty payments, contributions to improving household incomes, local infrastructure and economy and impacts on access to resources; (iii) social impacts explored key aspects related to employment opportunities created by land deals such as using foreign labour, the age and gender of the labourers, fair wages, sources of labour, labour practices, impacts on health and food security, and new technology transfers; and (iv) legal compliance assessed whether or not the land-based implementation complied with national regulations, concession agreements, and

[2] The national poverty line in the Lao PDR was approximately 13USD/person/month in 2005 and 25USD/person/month in 2015.

international standards as well as the progress of the development against the overall project schedule (see Hett et al., 2018).

The initial analysis of land-based investments and IQI scores points to key issues for further analysis. The most important issues are addressed in Papers I, II and III as described in the following sections.

6.4.2. Poverty Trends in Affected Villages (Paper I)

This chapter explains the methodology used to answer the first question in Objective 2, the results of which are presented in Paper I. The trends of poverty in the affected villages derived from the link between the LCI and poverty rates as reflected in the poverty measures prior to and after the establishment of land deals in the villages in 2005 and 2015, respectively. The poverty rates based on results of the monetary approach were measured by expenditure and consumption (Coulombe et al., 2016; Epprecht et al., 2008). An inferential statistic was employed to explore the nuanced association between change in poverty rates at the village level and the land-based investments. Furthermore, the poverty change rates were analysed alongside the type of land-based investments, size, phase of operation, the extent of land dispossession, implementation processes, and the geographical location of the affected villages to explore the contextual factors that may have had a negative or positive influence on the change of poverty rates in the affected villages.

6.4.3. Pathways to Human Well-being in Affected Villages (Paper II)

This chapter describes the approach and methods used to address the second question in Objective 2, and the results are presented in Paper II. The multi-dimensional poverty in the affected villages was analysed through the lens of human well-being in two steps. First, for the human well-being outcomes in the affected villages, the descriptive statistics were applied to characterize the changes in human well-being resources and outcomes since the establishment of a land deal in the village. Both changes in human well-being resources and outcomes were divided into the categories of 'enhanced', 'unchanged', 'adverse', and 'trade-off'. The analysis focused on three out of five livelihood assets (natural, financial, human, social and physical capital) while also including access to natural resources, human capital and physical assets. Furthermore, food security, income, and livelihood resilience using livestock as a proxy were considered for well-being outcomes.

Second, for the pathways to human well-being in the affected villages, the archetype approach (Oberlack et al., 2016, 2019) was applied to search for a set of configurations of explanatory factors that shaped human well-being outcomes. In sustainability research, the archetype approach has been increasingly used to identify how recurrent configurations of factors and processes that shape sustainable development outcomes across cases and contexts (Eisenack et al., 2019; Oberlack et al., 2016; Diana Sietz et al., 2019). Archetypes can be analysed through case typologies or as building blocks (Oberlack et al., 2019). In this analysis, we used both. First, as case typologies, cases were organized into well-being outcomes, which are called pathways that explain the effects of land deals on well-being outcomes. In this step, we investigated recurrent factors associated with the outcomes. Second, as building blocks, the Qualitative Comparative Analysis (QCA; Schneider & Wagemann, 2012) was applied to depict specific recurrent effects that occur within cases and characterize a single case into multiple archetypes (Eisenack et al., 2019). In this step, we compared the set of configurations of explanatory factors that led to different well-being outcomes.

6.4.4. Impacts of Land-based Investments on Rural Transformation from the Natural Resource- to Wage-based Livelihoods (Paper III)

This chapter explains approach and methods to answer Question 3 in Objective 2, and the results are presented in Paper III. The analysis explores the explicit, most important and immediate benefits gained from land-based investments that smallholders can enjoy. Drawing from QI data, job opportunities created by land-based

investments were characterized and contextualized. Then the quality of jobs in terms of types and wages offered to or accepted by local people were characterized. Second, the degree of smallholders' engagement in wage-labour within the land deals was analysed through an inferential statistic. The type of commodities, size, the origin of investment, phase of development, the extent of land dispossession and agro-ecological conditions in targeted areas were taken into account as key determinants that may have influenced the smallholders' engagement in wage-labour. Finally, to explore the contribution of land-based investments to the rural transformation from the natural resource- to wage-based livelihoods, the land and resource dispossession were linked to the extent and quality of jobs offered to or accepted by smallholders in the affected villages.

7. Key Insights

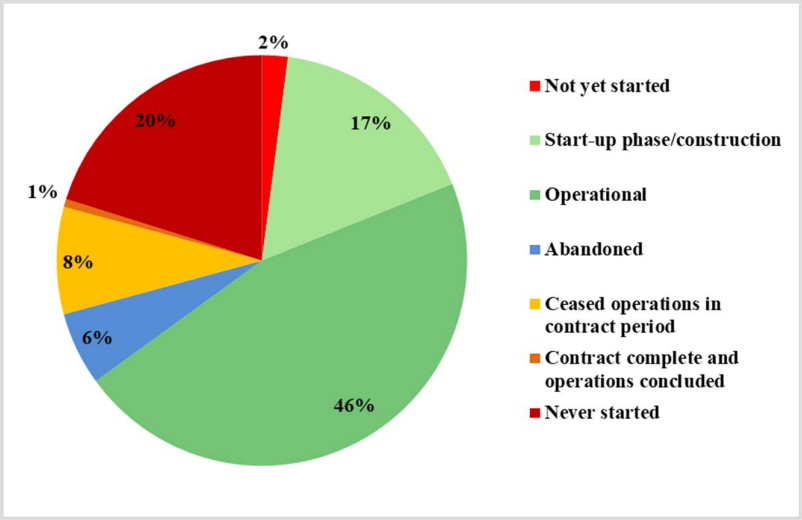
7.1. Characteristics, Contexts, Trends and Initial Impacts of Land-based Investments

Understanding the trends and socio-ecological contexts of land-based investments is essential for characterizing and contextualizing the impacts of land-based investments on the local environment and human well-being in the targeted areas. Gaining explicit knowledge about how the impacts of land-based investments are shaped is crucial for better-informed decision-making, and more robust policy recommendations related to land-based investments in the Global South (Edelman, 2013; Messerli et al., 2014; Oya, 2013). Hence the LCI book referred to in this section aims to explain the trends and socio-ecological contexts of land-based investments in the Lao PDR. Further, it offers initial descriptions of the impacts of land-based investments on the local environment, food security and livelihoods. Last, the book presents the overall performance of a wide range of land-based investments in terms of scope and scale regarding environmental, economic and social impacts as well as legal compliance. The results of this initial impact assessment point to issues and areas for further analysis, some of which were addressed in my three peer-reviewed papers.

Land leases and concessions in the Lao PDR: A characterization of investments in land and their impacts (LCI book)

Globally, this analysis might be one of the few that integrates national spatio-temporal statistics and key qualitative variables on environmental, economic and social impacts as well as legal compliance for land deals alongside other national socio-economic and environmental datasets. Furthermore, the analysis reveals the implementation status of the deals and the extent to which the land has been developed by land deals against the total area granted to investors by the government. This book provides an overall picture of the development of land-based investments and their impacts in the Lao PDR. Because the analysis covers as many topics as possible rather than delving deeply into a particular issue, the insights from it are broad but relatively shallow. The analysis includes all types of land-based investments including the agricultural, mining and energy sectors, but this section emphasises the insights into investments for agricultural purposes.

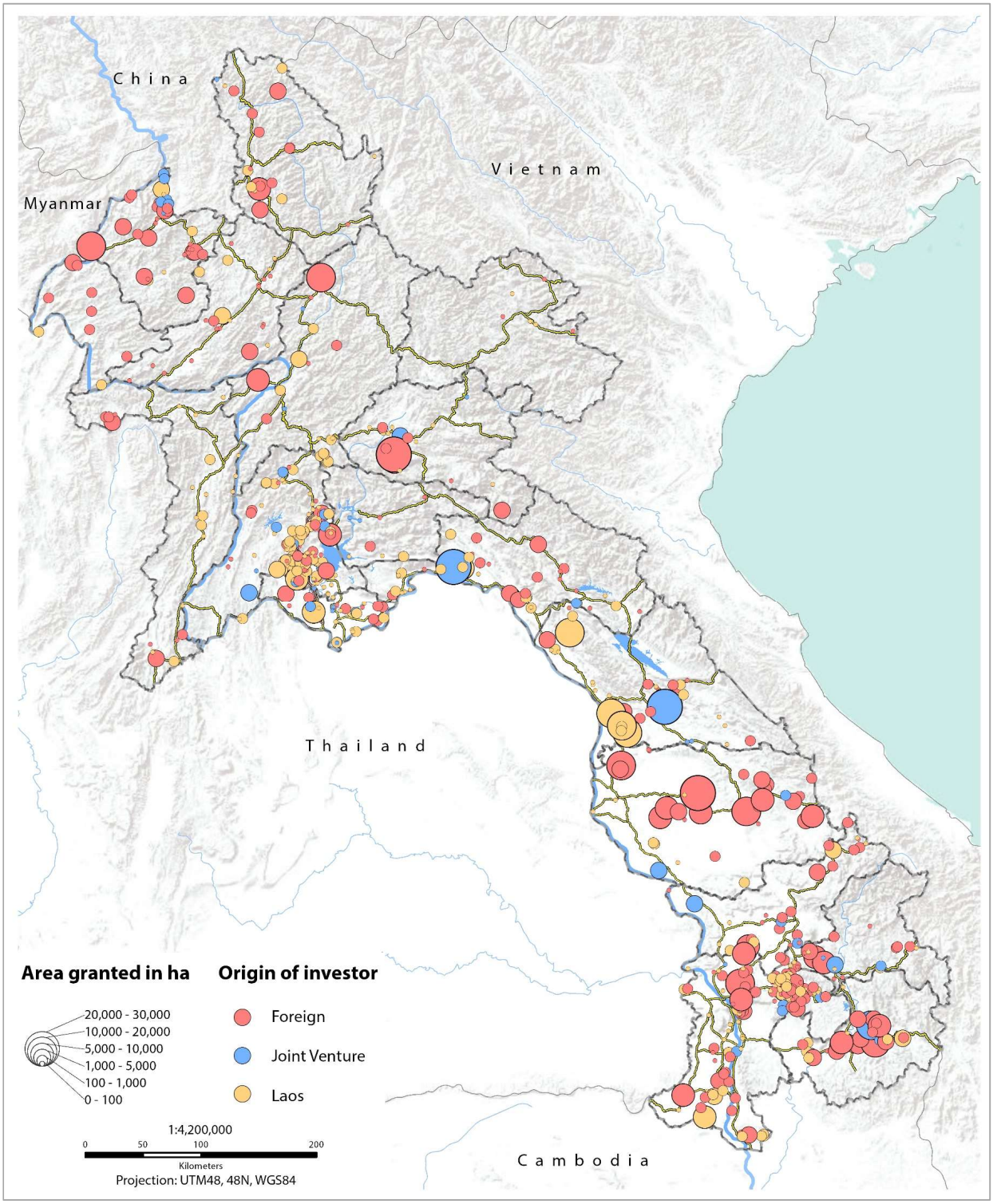
The results show that granting land to land based-investments by (trans)national investors in the Lao PDR has skyrocketed since the mid-2000s when the GoL began its policy of turning land into capital. The inventory in 2017 shows that more than one million hectares or four percent of the Lao PDR's territory were granted to 1521 domestic and foreign deals in four sub-sectors: agriculture, tree plantation, mining and hydropower. Nearly two-thirds (58%, 593,357 ha) of the total area was granted in 777 land deals for agricultural purposes. Although more than 70% of the total land deals developed 90% or more of the total area granted by the GoL, the overall proportion of developed areas against the areas granted accounted for barely 53% at the time of the inventory. In terms of the development progress presented in Figure 2, more than two-thirds of total deals were active, either having already reached the operational stage or still being in the start-up phase. Twenty percent of all deals failed to start their intended activities after obtaining approval from the GoL or ceased operations in the contract period. Nevertheless, this was considerably higher than land deal performance at the global level, in which only around 20% of total land deals were active on the ground (Deininger & Byerlee, 2011).



Source: LCI Book (Hett et al., 2020). Figure reproduced by author

Figure 2: Share of land deals in the agricultural sector by operational stages

Despite the increase in domestic investments since 2009, land-based investments in the Lao PDR have been driven by foreign investments in terms of size: foreign investments accounted for 65% (300 deals, 363,475 ha) of the total area granted to investments. The foreign investors mainly come from neighbouring countries including China, Vietnam and Thailand. Although domestic investments have dominated in terms of sheer numbers of deals, they have generally been smaller in scale than the foreign ones (Figure 3).

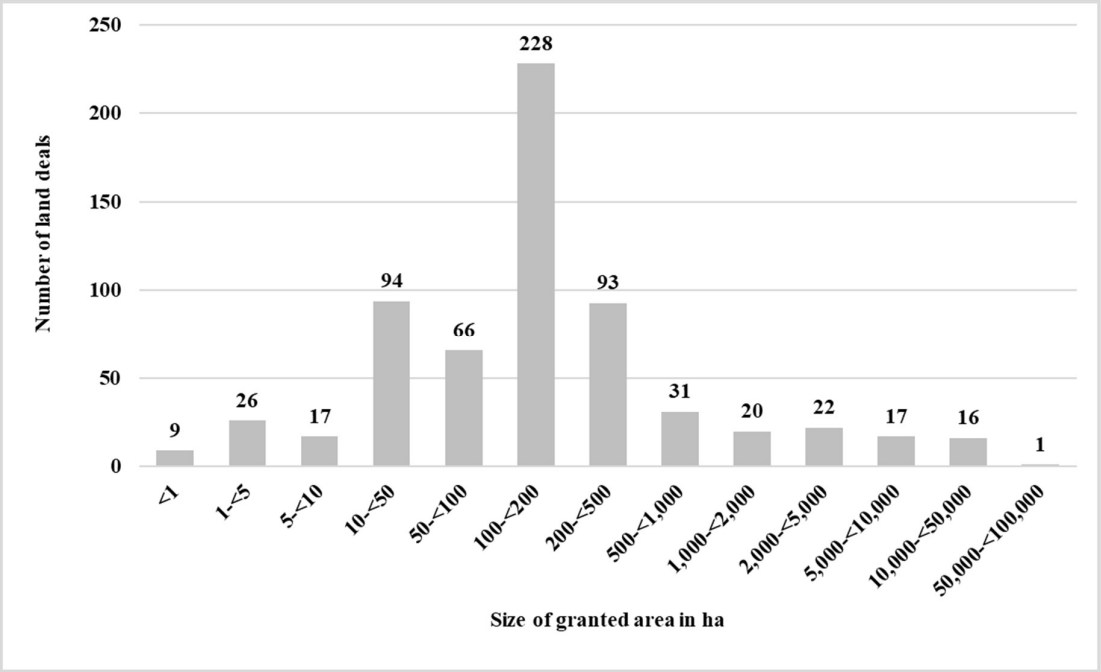


Source: LCI Book (Hett et al., 2020). Figure reproduced by author

Figure 3: Location and size of land deals for agricultural purposes by the origin of the investor

Most of the land-based investments in the Lao PDR (440 deals, 69%) are small-scale deals compared to the global land deals which are <200 ha as defined by the Land Matrix (2021). Land deals in the Lao PDR are

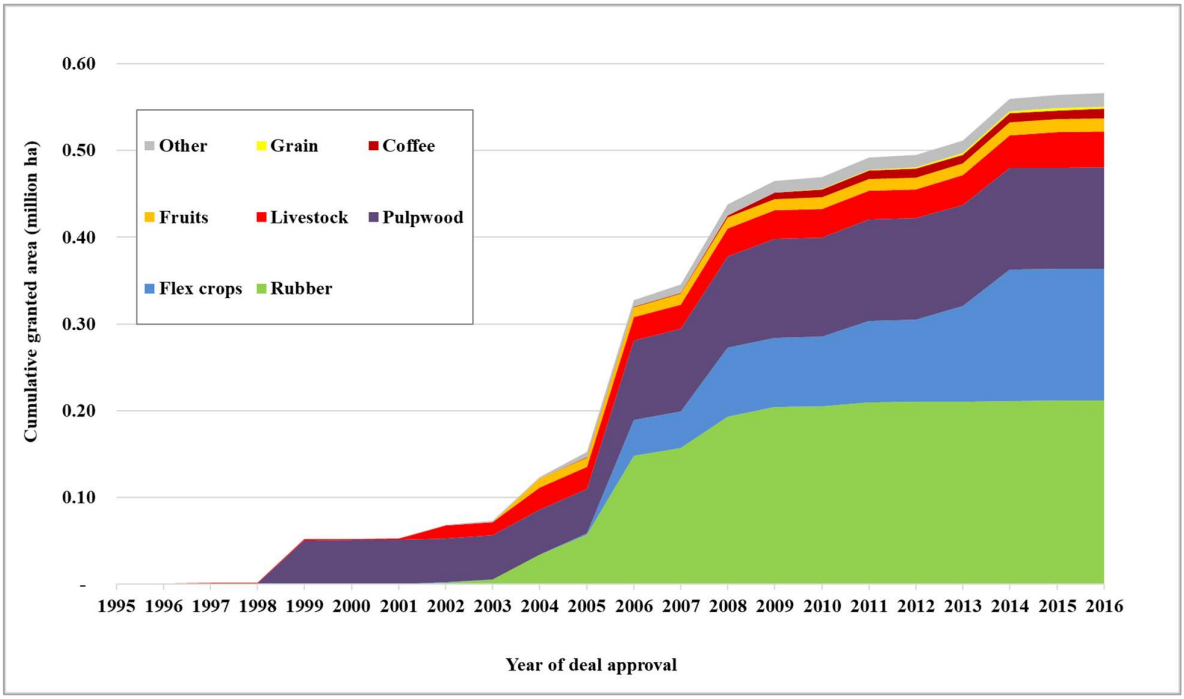
mostly private investments by individual or family businesses which often face difficulty gaining access to capital and technology (Figure 4).



Source: LCI Book (Hett et al., 2020). Figure reproduced by author

Figure 4: Number of land deals by size of the granted area

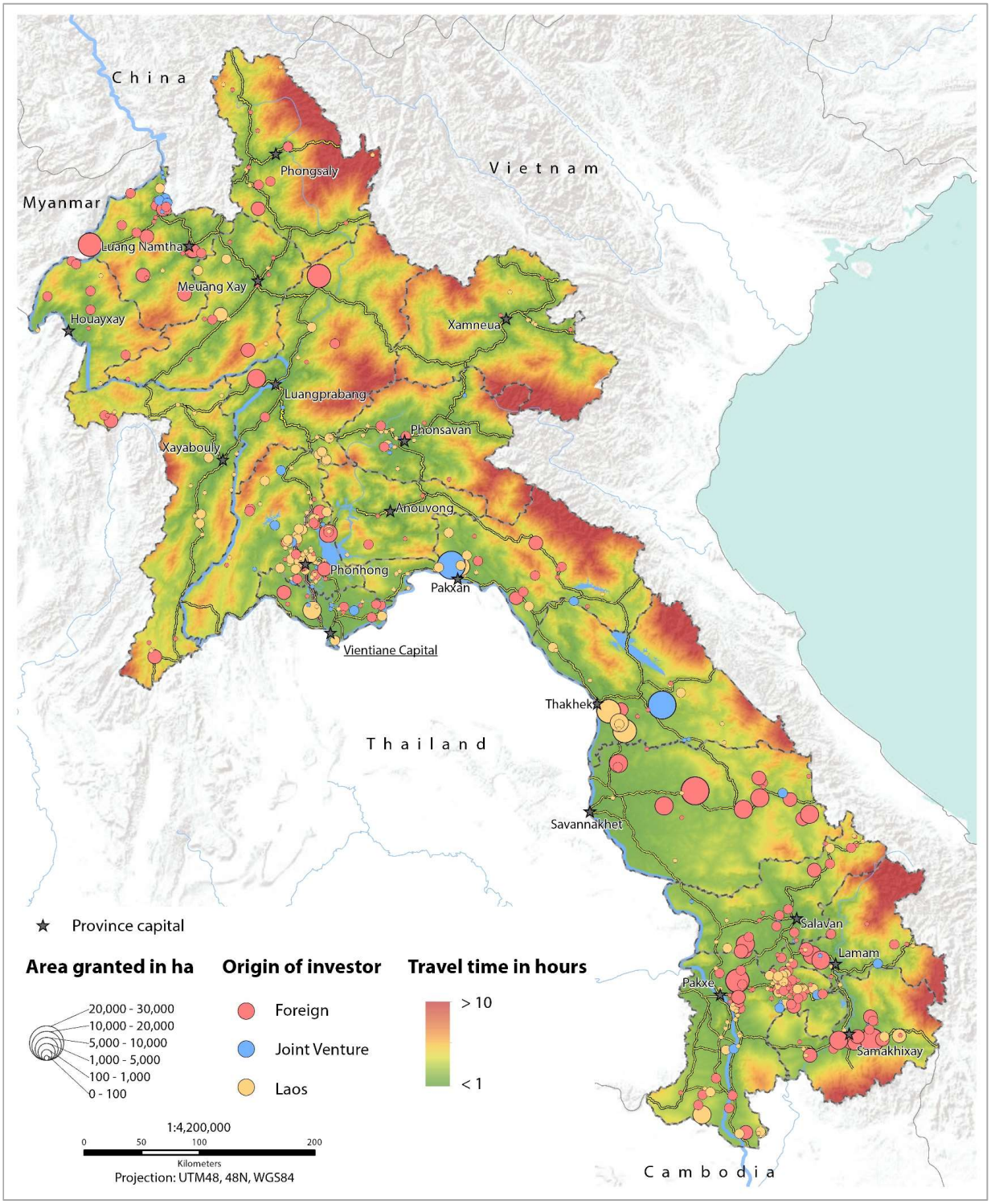
The pace of land deal development has been slowing since 2009 due to a number of concurrent drivers including the GoL's moratoria and global factors, e.g. the decline in prices of key commodities such as rubber and gold. However, many small-scale land deals arose between 2010 and 2016, and new investments shifted from the most dominant commodities, rubber and pulpwood, to large livestock (cattle) production, flex crops (i.e. sugarcane and cassava), coffee, and fruits (Figure 5). Nevertheless, overall, rubber and pulpwoods were still the predominant commodities invested in under land deals at the time the inventory was conducted in terms of cumulative granted area, accounting for 217,125 ha and 100,394 ha respectively. Other common commodities included sugar cane (96,083 ha), cassava (45,954 ha), and livestock (cattle) (31,465 ha).



Source: LCI. Figure by author

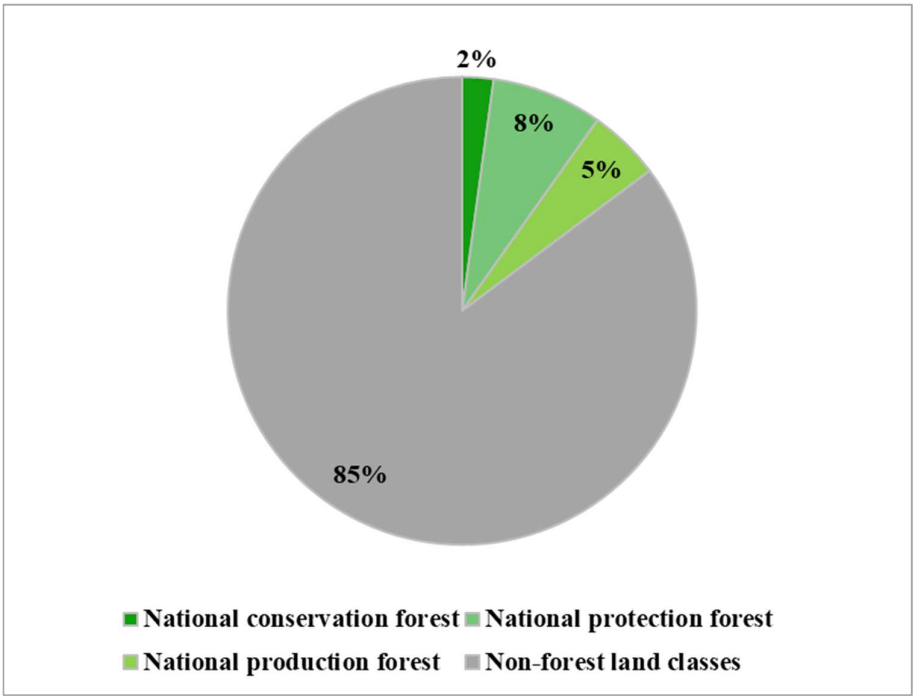
Figure 5: Area granted per year between 1995 and 2016 by commodity types

To ensure that land deals contribute significantly to rural development and poverty reduction through spillovers, the GoL strongly encourages these investments, especially in remote areas where there is still a high incidence of poverty. Low tax deals or tax exemptions have been promoted in remote areas. The results presented in Figure 6, however, reveal that most of the investments, especially the early ones, targeted easily accessible areas in the lowlands with better agro-ecological and socio-economic conditions. Due to the fact that these investments are in easily accessible areas, large quantities of land with high population densities have already been claimed by multiple users. For this reason, in many cases, the land deals have pushed smallholders off their land and away from their resources. At the same time, a large percentage of forested land including national conservation, protection, production and other types of forests on which smallholders rely for a wide range of ecosystem services have been converted to land-based investments (Figure 7).



Source: LCI Book (Hett et al., 2020). Figure reproduced by author

Figure 6: Location of land deals by the origin of investors and size with the degree of accessibility from implemented areas to the nearest provincial capital

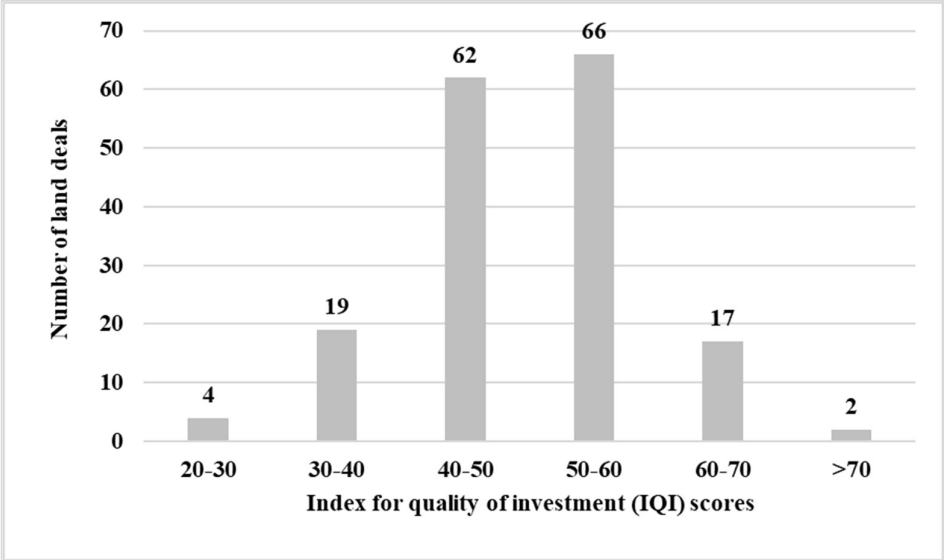


Source: LCI Book (Hett et al., 2020). Figure reproduced by author

Figure 7: Shares of area for land deals that fall in one of the three national forest management categories

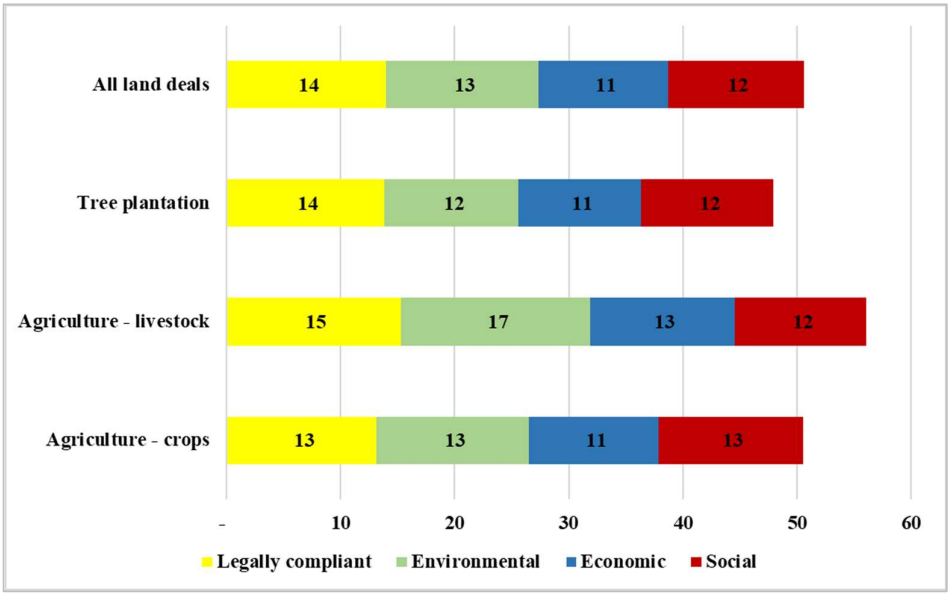
The results of the IQI reveal that the overall performance of land-based investments in multiple dimensions of quality of investment in the Lao PDR range from low to mediocre. The scores are diverse across the types of land deals in relation to commodities, size and dimensions. First, the crop and livestock deals have performed relatively better than the tree plantation deals (Figure 8). Second, although the mean scores in environmental and legal compliance aspects are quite high for the attainable scores, the scores for economic and social dimensions are low. Third, except for legal compliance, tree plantations show poor performance in all aspects. Livestock deals have low scores in the social aspect, meaning they have made a limited contribution to social development, especially employment, but they have performed relatively well in three other aspects. In contrast, despite a low score in the economic dimension, the crop deals have performed relatively better than the other investments in the social aspect (Figure 9).

Looking at the IQI for individual land deals, the results suggest that it is almost impossible to have a land deal that performs well across all four dimensions. As illustrated in Figure 10, the land deal for livestock performs well in legal compliance, economic and environmental aspects, but does not guarantee social development. In another case, eucalyptus, the investment achieves high scores in compliance, economic and social dimensions, but its performance is poor in the environmental aspect. Furthermore, although land deals such as ginseng investments have achieved low total IQI scores, they have performed relatively better in the social aspect compared to those with a high overall total score. In this regard, negotiations for trade-offs among stakeholders' interests are important to achieving sustainable development outcomes. Nevertheless, the IQI can be an important tool to facilitating the decision-making process.



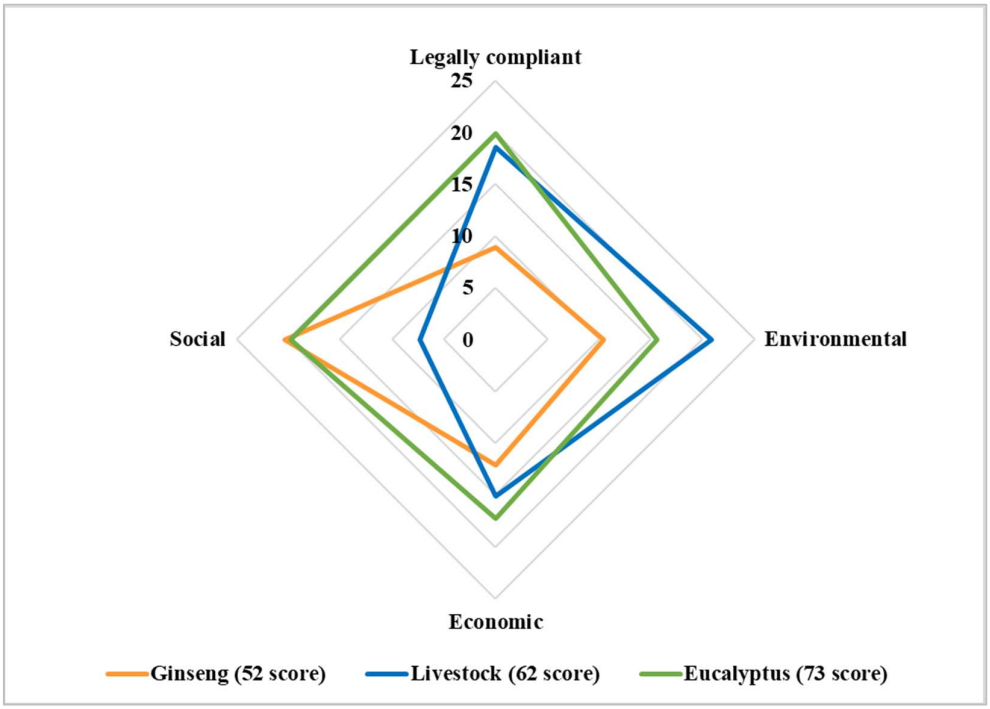
Source: LCI Book (Hett et al., 2020). Figure reproduced by author

Figure 8: Overall IQI scores



Source: LCI Book (Hett et al., 2020). Figure reproduced by author

Figure 9: Average IQI scores in four dimensions according to sub-sectors



Source: QI. Figure by author

Figure 10: IQI scores for four dimensions of selected land deals with the highest and low scores

Results of the analysis presented in the LCI book have been reported to the GoL through several channels and events, such as a summary report to the Prime Minister, presentations in the monthly government meetings, and the ordinary session of the National Assembly. Moreover, the results have been discussed with key policy and decision-makers at the national level through cross-ministerial and sectoral-specific workshops. In response, in 2018 and 2019, the GoL issued two notifications ordering the concerned ministries and local government to further investigate 438 concessions. These concessions were no longer active at the time the inventory was conducted, and included those with the implementation status of 'never started', 'ceased operation in the contract period', 'abandoned' or 'contract complete and operation concluded'. Based on further investigation, the GoL has ordered the termination of the concession agreements of some investments and outlined measures for others. Moreover, the GoL has instructed the concerned ministries and local authorities to work together to continue the integration of data on land concession and assessing the quality of investment in the remaining provinces. At the same time, the GoL has recognized the need for giving more power to local governments to monitor the existing land-based investments.

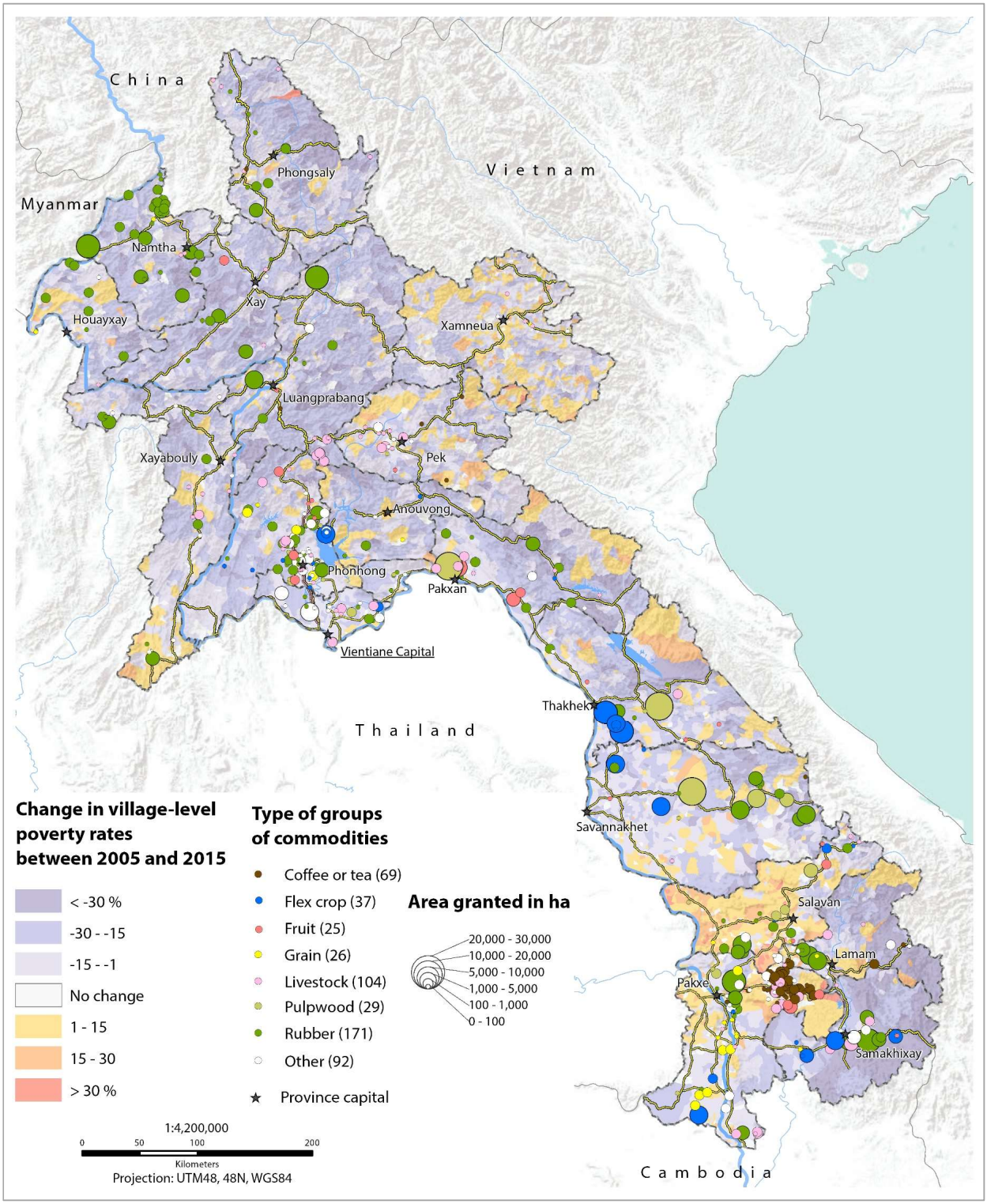
7.2. Poverty Trends in Affected Villages

Monetary income is the most common and widely used criteria employment for poverty measurements (Bader et al., 2016; Roelen, 2017). The international poverty line was created to make poverty comparisons across countries possible. The updated international absolute poverty line is $1.90 per day (Ferreira et al., 2016), and the recent Lao national poverty line is approximately 280,910 Lao Kip or $34 per person per month (LSB & World Bank, 2020). The governments in the host countries and some international organizations, such as the World Bank, see that land-based investments can offer an alternative for a stable source of monetary income in rural areas which in turn offers a shortcut to poverty reduction in the Global South. The analysis tested this proposition by investigating the effects of land-based investments on poverty in the affected villages using inferential statistics.

Paper I: 'Poverty trends in villages affected by land-based investments in Laos'

This paper analyzes village level poverty changes in the affected villages by comparing the poverty rates before and after the establishment of land deals. The paper advances our knowledge of the effects of land deals on poverty in targeted regions by revealing the contexts in which land deals have a nuanced association with poverty reduction or creation. The analysis considers the spatio-temporal statistics and qualitative variables relating to the characteristics of land deals and their implementation processes to explore the contextual factors that may be associated with the poverty change rates at the village level. The results reveal that poverty rates in the affected villages decreased significantly between 2005 and 2015, which was consistent with overall poverty trends in the Lao PDR. This contrasts with global studies that have argued that land deals increase poverty in the Global South. However, in the cases in which villagers lost a greater amount of land to land deals and had limited access to alternative land or employment, either the poverty reduction rate was lower or the poverty rates increased over that period compared to the ones with less significant land loss.

A nuanced range of observations arose for poverty reduction in affected villages, in at least the short term, including: (i) most land deals in the Lao PDR are small-scale with areas with granted land of less than 200 ha, and most had yet to clear all of their land up to the time of assessment; (ii) the smallholders did not lose all of their land, meaning that they were still able to continue their traditional livelihoods, either for subsistence or market purposes; and (iii) land deals may push out the displaced smallholders thus leading to out-migration, to places such as nearby cities for urban jobs. In contrast, others may move in to seize the jobs or other development opportunities brought by land-based investments. Moreover, although our regression model suggests that land deals in poorer areas have stronger associations with poverty reduction, most land-based investments in the Lao PDR have targeted the less poor areas with better accessibility and a wider range of existing development opportunities (Figure 11).



Source: LCI Book (Hett et al., 2020). Figure reproduced by author

Figure 11: Changes in village poverty rates between 2005 and 2015 in the affected villages

7.3. Pathways to Human Well-being in Affected Villages

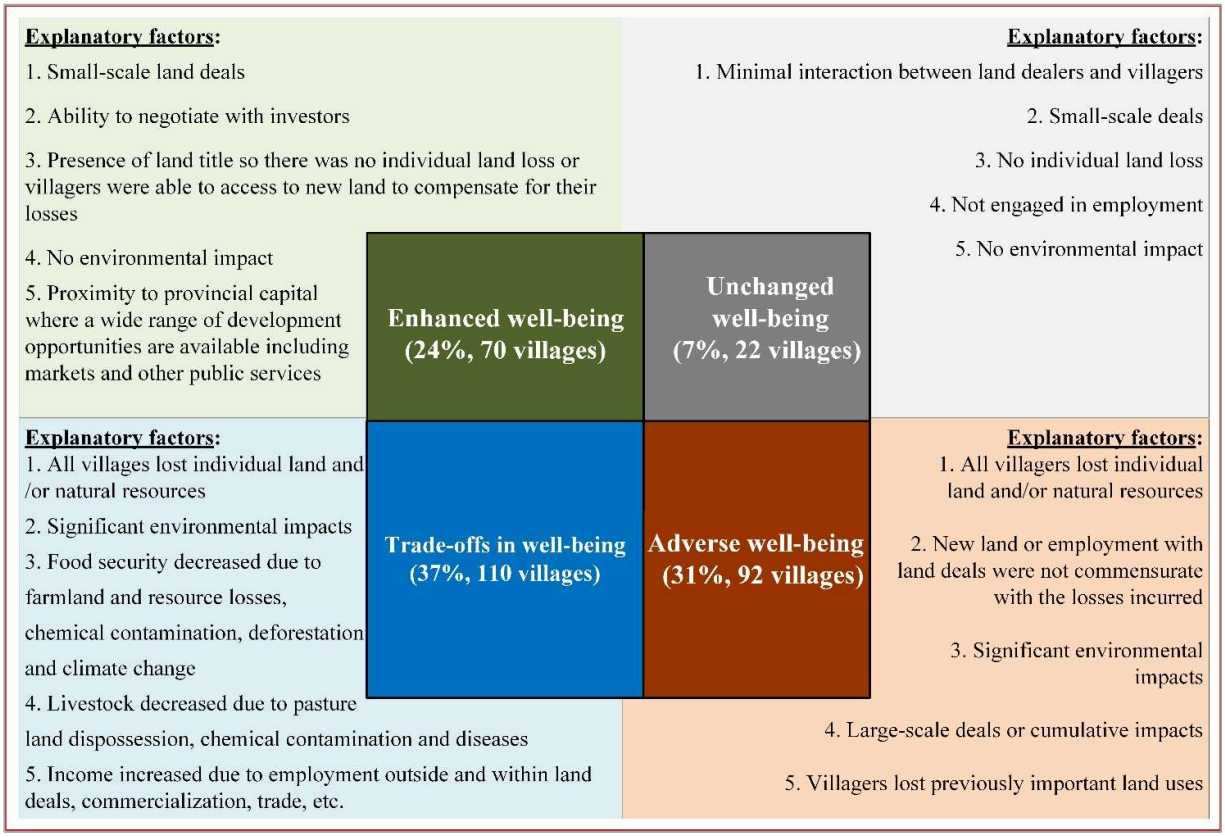
Although monetary poverty measurements are still widely used (Bader et al., 2016; Roelen, 2017), multi-dimensional poverty perspectives have been increasingly recognized as an alternative approach for overcoming the shortcomings of monetary poverty measurements. The multi-dimensional approach goes beyond the economic variables to measure multiple dimensions of poverty (Bennett & Mitra, 2012; Alkire & Santos, 2014), that can be assessed using different frameworks (UN, 2017), such as the multi-dimensional poverty index (MPI; Alkire et al., 2014), social exclusion and inclusion (S. Hickey & du Toit, 2007), basic needs (Gasper, 2007), and capability poverty (Sen, 2000). From a well-being perspective, the outcomes of development are the most meaningful indicators for measuring poverty rather than the means, e.g. income. However, the means are considered the key instrument for achieving the well-being of the individual (Mauro et al., 2018; Robeyns, 2005).

In contrast to Paper I, Paper II assessed multi-dimensional poverty using the concept of human well-being (Gasper, 2007). Previous studies suggest that the well-being outcomes in the context of land deals are complex and determined by numerous factors (Edelman, 2013; Hufe & Heuermann, 2017; Oberlack et al., 2016; Oya, 2013). The archetype approach (Oberlack et al., 2019) reveals the explanatory factors that jointly mediate the human well-being outcomes in the targeted areas. The archetype approach has been increasingly used in sustainability research (e.g. Levers et al., 2015; Messerli et al., 2015; Sietz et al., 2017, 2019) as it enables the analysis to identify recurrent configurations of conditions and processes that have shaped the (un)sustainability across contexts, and then pointed to the necessary interventions for sustainable development outcomes (Oberlack et al., 2016; Diana Sietz et al., 2019).

Paper II: 'Pathways to human well-being in the context of land acquisitions in Lao PDR'

This paper draws on insights gained from 294 villages affected by 176 land-based investments. The results reveal that land-based investments affect human well-being through 18 distinct pathways. Many pathways (eight, affecting 98 villages or 33% of the sampled villages) involved trade-offs among different dimensions for well-being outcomes. Five pathways, occurring in 28% (n = 83) of the villages, led to adverse well-being outcomes. The remainder included three pathways, occurring in 21% (n = 61) that improved the well-being outcomes of the sampled villages, and two pathways (in 15 villages) that led to unchanged well-being outcomes. Figure 12 presents the summary of key explanatory factors in each outcome. Enhanced well-being only occurred under a narrow set of strong pre-conditions or through a concurrent process unrelated to land acquisitions, such as agricultural commercialization, employment outside land acquisitions and trading, which were stimulated instead by their proximity to the provincial capital. Adverse well-being outcomes arose mainly due to poor access to land and other natural resources or negative environmental impacts, such as water degradation or pollution from agrochemicals from the land acquisitions. However, the main contrasting explanatory factors which made pathways differ from one another included the scale of the land deals, the cumulative impacts, the extent of land and resource dispossession and the degree of environmental impacts. Other factors were the availability of new land and resources to compensate for the losses, and proximity to the provincial capital where a wide range of development opportunities, including markets and public services, were available. Meanwhile, the ability of villagers to negotiate with investors was non-existent in many cases, thus constituting a distinctive factor.

Furthermore, we found that in many cases, the FPIC was not sought in the development of land deals, and obtaining consent in accordance with the FPIC principles did not guarantee positive outcomes. However, in some cases, the FPIC provided a space for consultation that allowed smallholders to negotiate with investors over land allocation and other economic benefits.



Source: Nanhthavong et al. (2021). Figure by author

Figure 12: Well-being outcomes and a summary of key explanatory factors in each outcome

The results further revealed five archetypical processes which mediate the effects of land acquisitions on well-being including: (i) shifting access to land and natural resources; (ii) commercialization of agriculture; (iii) availability of development opportunities in the region; (iv) environmental impacts; and (v) employment opportunities within and beyond land acquisitions.

7.4. Impacts of Land-based Investments on Rural Transformation from the Natural Resource- to Wage-based Livelihoods

The research sought to explicitly analyse the most important and immediate anticipated benefits from land-based investments that local people could enjoy (Hallam, 2009). Paper III analysed the employment opportunities created by land-based investments and the jobs offered to or accepted by former land users. It also examined the contributions of land-based investments towards rural transformation, particularly along the gradient of natural resource- to wage-based livelihoods in 282 villages affected by 164 land deals in the Lao PDR. We applied an agrarian political economy approach, specifically the concepts of primitive accumulation (Bernstein, 1977; D. Hall, 2013; Marx, 1976) and precarity (Cruz-Del Rosario & Rigg, 2019; Standing, 2011) to understand the processes connected to the land-based investments that transform resource and labour relations.

Paper III: 'Land-based investments for agricultural commercialization in Lao PDR: Improving rural employment or opening doors to precarization?'

This paper has advanced our knowledge of labour debates in the context of land-based investments through a systematic analysis that links the quality of jobs offered to or accepted by former land users with the land and resource dispossession by land deals. The unique national dataset consisting of quantitative and qualitative variables has allowed the analysis to reveal the contexts in which the peasants' engagement in wage-labour acts as a rural livelihood diversification or as a strategy to cope with losses which can become precarious.

The paper suggests that land-based investments transform labour relations as well as peasant access to land and livelihood resources. Instead of contributing to rural development by transforming livelihoods from the natural resource- to wage-based, land deals have pushed former land users into precarious conditions through three processes: (i) dispossession without proletarianization, (ii) a greater extent of land and natural resource dispossession without offering adequate proletarianization to former land users, while employing primarily foreign workers to implement the land deals, and (iii) adverse incorporation into semi-proletarianization – hence, former land users who lost significant land and other resources to land deals were more likely to rely on wage-labour with land-based investments as a strategy for coping with these losses. In this respect, we argue that engaging in wage employment with land-based investments is a necessity rather than a livelihood choice. Furthermore, the paper indicates key contextual factors that determine job creation in land-based investments and peasant engagement in wage-labour with those investments. This paper offers crucial evidence to better inform the policies relating to managing and regulating existing and future land-based investments for sustainable outcomes, particularly in regard to the prominent claim of employment creation.

8. Synthesis and Outlook

The overall aim of this thesis is to test the overarching contested propositions on land-based investments in the Global South. The first proposition stipulates that land-based investments by trans(national) investors may be a shortcut to rural development and poverty reduction. The second, contradictory proposition claims that these investments are used by foreign governments and non-governmental actors from economically-advanced countries as a way of controlling the best land and the associated resources in developing countries.

In this research, I tested the validity of those contradictory propositions from the perspectives of monetary poverty, multi-dimensions of human well-being, primitive accumulation, and precarity through a wide range of methodologies including inferential statistics, archetype approach, and spatial analysis. Specifically, I analysed the recent government-owned LCI database composed of spatio-statistics and QI data as a subset of LCI which contains key qualitative variables relating to land deals' implementation processes and their impacts on human well-being along with other national socio-economic datasets such as village-level poverty incidence.

8.1. Key findings

My findings reveal that land-based investments by trans(national) investors cannot be a pathway for rural development and poverty reduction in rural areas without accompanying related measures. One example would be the simultaneous development of the other sectors such as manufacturing to provide an alternative to counteract the land and natural resource losses and absorb the labour force released from traditional livelihoods. In a small number of villages where specific conditions such as land registration, good access to markets and other services, and alternative employment opportunities were met, well-being increased or remained unchanged despite the presence of land-based investments. In most cases in the Lao PDR, most of these conditions are not met, and overall well-being outcomes were not positive.

The results also indicate that international CoCs, such as FPIC principles, per se do not guarantee positive outcomes from land-based investments as is claimed by some international organizations (Titche, 2017; von Braun & Meinzen-Dick, 2009). However, they do provide a space for consultations with the former land users. In a small number of cases with strong community leadership teams and where an FPIC was applied by the investors, former land users were able to negotiate for land allocation and/or other economic benefits, leading to increased human well-being outcomes. Additionally, simply conducting an EIA does not prevent negative impacts from land deals: the environmental impacts depend on adequate impact monitoring and safeguards being in place throughout the life of the land-based investment.

My analysis shows that in the majority of affected villages, the poverty rates measured in purely monetary terms decreased significantly between 2005 and 2015, which is before and after the land-based investments were established. However, from a multi-dimensional human well-being perspective that takes into account food security and income and livelihood resilience using livestock as proxy suggests that the majority of land deals lead to trade-offs among different dimensions of well-being or outcomes that are, overall, adverse to well-being. Furthermore, in cases with significant land loss and limited alternative opportunities available in the region, the monetary poverty rates increased over the same period.

Instead of contributing to positive rural transformations, particularly alongside the gradient of natural resource-to wage-based livelihoods, my analysis reveals that land deals pushed former land-users into precarious conditions, namely through: (i) dispossession without proletarianization, (ii) experiencing a greater degree of dispossession without adequate proletarianization, and (iii) adverse incorporation into semi-proletarianization. Moreover, the results indicate that employment opportunities with land-based investments are not a choice, but are livelihood constraints: in cases in which peasants lost significant land and other natural resources such as non-timber forest products (NTFPs), timber, wild animals, and water for agriculture to land deals, or where access to alternative land was restricted and where other development opportunities were limited, these former land users were more likely to rely on precarious wage-labour with the investors to compensate for their losses. In contrast to previous global studies which state that employment opportunities with land deals often materialize only in the development phase (see Oberlack et al., 2016), my findings suggest that in the Lao PDR, the employment opportunities created by land deals per hectare in the operational phase were significantly higher than in the development phase. Yet, the jobs in the operational phase are not often offered to local people because foreign migrant workers are brought in to take them. One of the explanations for this might be that the jobs in the operational phase may require a higher skill set, while the availability of these skills is often limited within the country. For instance, tapping rubber requires a specific technique and the work often takes place at night.

Finally, my analysis reveals that many land deals are actually cases of land speculation for long-term benefit rather than those that offer full (or any degree at all) development potential to peasants in the targeted regions as expressed by Borras Jr, Franco, et al. (2012). Of the relatively a large total area granted to investors in the Lao PDR, only approximately half of the total area was developed by the investors at the time the assessment was conducted, and more than a third of the total approved land deals had never begun to develop their investments, had ceased operations, or had been abandoned.

8.2. Significance of the research

My research has made two significant contributions to the current global debates on possible ways to better regulate and govern land-based investments in the Global South so that they become sustainable agricultural investments and advanced our knowledge of livelihood implications triggered by LSLAs:

First, to my knowledge, my research is the only national-scale analysis that reveals the national trends and socio-ecological contexts of land-based investments. Previous research on livelihood applications in land deals has

drawn insights primarily from local case studies (e.g. Baird, 2011; Baumgartner et al., 2015; Bottazzi et al., 2018), and regional and global inventories (e.g. Davis et al., 2014; Rulli & D'Odorico, 2014). However, analysis at the meso-level has still been lacking—evidence that is crucial knowledge that informs national policy for better governance of land-based investments. Case studies reveal the unfolding of the detailed process of the cases (Beach & Pedersen, 2016) but the evidence is often insufficient for generalisation (Magliocca et al., 2018), and the selection of the cases often overemphasizes the problematic aspects, such as large-scale cases that report negative impacts, conflicts or resistance. While regional and global inventories provide generalised and important spatial patterns, they cannot trace the implementation processes and impacts of land deals on the ground due to unreliable data from crowdsourcing (Messerli et al., 2015; Oya, 2013). My research employs a systematic assessment using a mixed methods approach. I analysed the 2017 national LCI dataset alongside other national socio-economic datasets in the Lao PDR, such as poverty incidence. The LCI is a unique, complete national dataset consisting of spatio-temporal statistics and qualitative variables relating to the impacts of a wide range of land deals. The analysis unpacks the processes through which land-based investments transform rural areas, particularly along the gradients of natural resource- to wage-based livelihoods. Furthermore, the analysis reveals pathways toward different well-being outcomes and makes nuanced contributions to poverty reduction in targeted areas. The results suggest that omitting the qualitative variables (land deal implementation processes, changes in access to land and associated resources, environmental impacts, livelihood options and adaptations triggered by land deals) from the analysis can lead to misinterpretations in the livelihood implications of land-based investments.

Second, through a range of methodologies that draw on concepts such as monetary poverty, multi-dimensions of human well-being and primitive accumulation and precarity, the study portrays different aspects of human well-being in the targeted areas by comparing the situation before and after the establishment of land deals in the villages. The research suggests that overemphasizing the monetary aspect of poverty does not capture the complete picture of the quality of life or poverty in rural areas in the context of land-based investments, which may result in misguided policies related to land deals. The decrease in monetary poverty rates in the majority of affected villages does not necessarily achieve positive human well-being outcomes. Additionally, although wage employment opportunities have become an important source of cash income in rural areas, my research indicates that solely depending on those opportunities can push peasants into more vulnerable livelihoods because the jobs offered by land deals are poor quality and unstable due to low wages, the fact that they are often casual or seasonal work.

8.3. Policy Implications and Recommendations

The work and analysis conducted as part of this PhD within the framework of the K4D project have had a significant impact on decision-making and governance in the management of land-based investments in the Lao PDR. This cross-sector fieldwork has improved information sharing and coordination among the sectors, and it allows an integrated analysis. As explained in Section 7.1., the results have guided the GoL to take corrective actions on certain concessions—particularly those with extremely poor compliance in terms of the concession agreements. Further, the work points to the need for more efficient coordination among the sectors across administrative levels in order to better govern land deals. At the same time, the GoL has, through this work, realized that more power should be given to local governments at the provincial and district levels to improve the monitoring of land-based investments as instructed in the GoL Resolution Number 13 (GoL, 2019).

In the Lao PDR, the expansion of land-based investments since the GoL's second moratorium in 2009 has slowed, but new investments, especially smaller ones, have continued to rise. It seems that this trend will persist since the GoL is currently improving the investment climate in an attempt to attract new investments (IFC, 2021) to overcome the recent financial deficit and boost growth (VT, 2019). In addition, many existing land deals have yet to develop all the land that they have obtained from the government. Therefore, adverse impacts

from the development of land-based investments must be avoided, and these sustainable agricultural investments need to be realized:

First, despite the decrease in monetary poverty in the majority of the affected villages, land deals have led to trade-offs in or adverse well-being outcomes in most of the affected villages. My findings suggest that the household income in these villages increased to some extent after the establishment of a land deal, and wage-labour with land deals was mentioned as one of the reasons, but other indicators of multi-dimensional human well-being (food security and resilience) decreased. This means that a general improvement in economic welfare in villages affected by land deals is not necessarily accompanied by improvements in other important aspects of quality of life. This points to the need for more comprehensive social and environmental impact analysis and monitoring, and planning and implementation of related accompanying measures. For instance, the impact assessment for approval of new investments should take into consideration other natural resources such as NTFPs, flora and fauna, pasture, water for agriculture, etc. rather than just overemphasizing the land, since these resources still play a very important role in rural livelihood resilience. Therefore, protecting land-use rights, including those related to common resources, will ensure that smallholders, especially for the women and vulnerable groups like ethnic minorities, can sustain their traditional livelihoods, especially during the transitional period of the development journey. At the same time, employment with land-based investments should be a choice instead of a livelihood "survival strategy" as expressed by Oya & Pontara (2015).

Second, the results of my research reveal that the well-being outcomes in land-based investments are context-specific, and it requires specific conditions to improve human well-being as elaborated in Section 8.1. Thus, the development through land-based investment approach should take into account heterogeneous, socio-ecological contexts. For instance, in cases where there are no official land rights in place, where there is limited access to markets and services that would allow smallholders to engage in commercial agricultural production, non-farm employment, or other alternative opportunities, and where livelihoods are still highly dependent on natural resources, land deals should be avoided or reconsidered. Otherwise, the GoL or investors must ensure that specific mandatory measures such as supporting market access, the securing of land tenure, or an appropriate livelihood development program are in place.

Third, a CoC incorporating EIAs and FPIC is often expected to guarantee positive outcomes for land-based investments (Titche, 2017; von Braun & Meinzen-Dick, 2009). However, my research reveals that outcomes for land deals are shaped by a range of concurrent factors. The adverse well-being outcomes occur partly due to negative environmental impacts. At the same time, negative environmental impacts can still occur even when EIAs are conducted. Moreover, an FPIC does not guarantee a positive outcome, but it does provide an avenue for negotiations over land allocation and other economic benefits. It follows that these instruments are important tools that should be used in the development of land deals, but should not be considered as the solution for the provision of safeguards. Appropriate measures need to be followed: safeguard mechanisms should be in place throughout the project cycle and adequate environmental monitoring must take place.

Finally, promoting land-based investments as an instrument for poverty reduction in rural areas through shifting from the natural resource- to wage-based livelihoods needs to be reconsidered since the current approach is not working. My research suggests that the pathway to improved human well-being in the context of land-based investments is very narrow. To this end, the GoL's priority should be on considering appropriate trade-offs among different development goals across politics of scale (see Zia et al., 2011). For instance, large-scale, labour-intensive investments may not significantly contribute to national growth, but they may generate a higher number of employment opportunities. These jobs, created by labour-intensive investments, may be a good fit with the unskilled or semiskilled labour in rural areas and have a greater positive impact on human well-being. Or, the GoL should find an alternative to compensate for the losses and sustain the livelihoods of the displaced smallholders, such as establishing social protection and development programs to prevent adverse well-being outcomes, especially during the transition period. Another possible approach would be for the GoL to use the

revenues from the land-based investments to reinvest in development in the other sectors, such as manufacturing and service, to absorb the labour force released from traditional livelihoods.

8.4. A Critical Review of the Research Approach and Future Areas for Research

One of the great advantages of being embedded in a collaborative research project with the GoL has not only been having permission to access comprehensive national datasets but also being able to influence improvements to the quality of the data. For the project framework in which this PhD research is embedded, I have been one of key people designing approaches and tools, as well as managing the implementation of data collection, quality control and processing. This research process has given me the incredible opportunity to access a high quality database and enabled me to draw upon robust evidence to inform decision-making. As a result, the findings have been directly used by the GoL and appropriate actions have been taken against the poorly performing land deals (GoL, 2019). This is an affirmation that my research has not only contributed to the current global debates on the implications of land-based investments on local livelihoods, but also provided the urgently needed evidence for better-informed policies related to these investments in the Global South. However, the insights from my research point to key issues for further in-depth analysis. For instance, many peasants have lost land and associated resources to land deals, but the job opportunities that were supposed to accompany the land deals were limited. Therefore, it is essential to understand the strategies that displaced former land users have used to cope with their losses.

This research was conducted in the villages directly affected by land deals or in which land deals are located; therefore, it cannot capture the well-being of all groups of peasants, particularly smallholders who, because of land deals, have emigrated to nearby towns or other places for jobs. For this reason, an ethnographic study could be an alternative to a place-based analysis for seeing a complete picture of the ways that land deals have impacted human well-being.

Another issue is the need to compare the wages offered to local people by land deals with those in smallholder agriculture so as to fully qualify the employment opportunities created by the land deals. Some may argue that although the wages paid to local people by land deals are often lower than the national official wages, they may be higher than those paid by smallholder agricultural production or other similar jobs in the region.

The framework of the project that my research was embedded in was census-based and attempted to cover as many aspects as possible, including environmental, economic and social impacts, as well as the legal compliance of all land deals across agro-ecological contexts. This comprehensive national dataset with spatio-statistics and key qualitative variables relating to human well-being impacts has allowed my research to uncover important patterns of how land deals have impacted human well-being in the targeted regions. The meso-level evidence is urgently needed to better inform the national and international policies relating to land-based investments in the Global South. However, due to the gaps in the meso-level data (e.g. detailed processes of the cases), some important questions on the impacts of land deals on human well-being, particularly subjective well-being, could not be addressed in the course of my PhD research. Therefore, selecting a few case studies alongside the national assessment may be an alternative approach for future research to verify the results of the national-level data analysis. At the same time, a deeper understanding of the specific process of impacts experienced in association with land-based investments on human well-being in the targeted areas is necessary (Beach & Pedersen, 2016).

My PhD research has opened some fundamental issues that future research should look into. First, many land deals have not completed developing the land obtained from the government. This means that the full picture of the implications on human well-being in the targeted areas is yet to be fully captured. Therefore, it will be important to investigate the long-term implications using the same methodology. Second, this research focused solely on the villages that were directly affected by land-based investments—the villages that lost individual or communal land to land deals. Nevertheless, neighbouring villages may have experienced spillovers from the

land-based investments in terms of employment opportunities, outgrower schemes or downstream impacts. Hence, future research should expand to include villages indirectly as well as directly affected. Finally, rural livelihoods are complex because they are influenced by numerous drivers. Thus, future research should consider both place-based and ethnographic approaches to understand the concurrent factors that may shape livelihood changes.

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Part II: Research publications

Book: Land leases and concessions in the Lao PDR: a characterization of investments in land and their impacts

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Paper 1: Poverty trends in villages afected by land-based investments in rural Laos

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Poverty trends in villages affected by land-based investments in rural Laos

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ABSTRACT

This paper contributes to debates on the implications of land-based investments on local livelihoods in the Global South. Drawing on a comprehensive national dataset on land concessions in Laos, and 2005 and 2015 village-level poverty rates, we examine the association between land-based investments and poverty at the village level in Lao rural areas. Results outline contexts in which land-based investments have either positive or adverse association with village-level poverty change rates; they also reveal factors that determine village-level poverty reduction in Laos. Our results suggest that poverty rates in villages affected by land-based investments decreased significantly between 2005 and 2015, following the national trend in Laos. However, in cases where land-based investments caused more farmland loss, poverty reduction was low or poverty rates increased over this period. Results further reveal that land-based investments implemented in more remote areas or poorer villages had a stronger association with poverty reduction. However, poverty was not a central consideration for the establishment of land-based investments. Our findings fill an important gap, providing a middle-level analysis from which grounded observations are analyzed alongside national trends.

1. Introduction

The dramatic increase in land-based investments[1] for agricultural production in the Global South since the 2000s has become a global concern, particularly due to the adverse impacts on local environments and livelihoods. A range of global drivers triggered these investments (Zoomers, 2010), while host government policies directly or indirectly facilitated them by providing tax incentives, zoning land specifically for investment, and mediating land conflicts with communities (Cotula, Vermeulen, Leonard, & Keeley, 2009; Margulis, Mckeon, & Borras Jr, 2013). In addition, the World Bank championed agricultural land-based investments, claiming that large areas of arable land in developing countries, referred to as "idle land," was unproductive, inefficiently used, or underutilized (Hall, 2011; White, Borras Jr, Hall, Scoones, & Wolford, 2012). In this view, granting land in marginal areas to investors could boost agricultural productivity and alleviate poverty in rural areas of the Global South (Colchester et al., 2013; White et al., 2012; Borras Jr, Fig, & Suarez, 2011). While proponents anticipate off-farm employment opportunities and spillover effects such as infrastructure or market access (von Braun & Meinzen-Dick, 2009; Deininger et al., 2011; Mirza, Speller, & Dixie, 2014), land-based investments often compete with smallholders for farmland and associated resources. This may challenge local livelihoods or increase vulnerability (Daniel, 2011; Rulli & D'Odorico, 2014; White et al., 2012; Zaehringer, Atumane, Berger, & Eckert, 2018). In addition, most rural land is already in use for agricultural production or ecosystem services that are essential to smallholder livelihoods (Hilhorst & Zoomers, 2012; McMichael, 2012; Zoomers & Kaag, 2014). The categorization of land as idle "often reflect[s] an assessment of the productivity rather than existence of resource uses: these terms are often applied not to unoccupied lands, but to lands used in ways that are not perceived as "productive" by government" (Cotula et al., 2009, p. 62). Critics, therefore, see land-based investments as a way that transnational investors from capital rich countries rush to control farmland and associated resources in developing countries for export-oriented food and non-food commodity production, rather than local development opportunities (Borras Jr & Franco, 2012; De Schutter, 2011; Hall, 2013); this is known as "land grabbing" (Borras Jr, Hall, Scoones, White, & Wolford, 2011).

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[1] Throughout the paper, the terms "land-based investment" and "deal" are used interchangeably.

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Global analyses and empirical studies have shown how land-based investments reduce available farmland and negatively impact local livelihoods. This is in part because they rarely target so-called idle land, and focus instead on accessible land with good agroecological conditions; these tends to have high population densities and thus an already high demand on arable land (see Anseeuw et al., 2012; Cotula, 2012; Messerli et al., 2014). Moreover, land-based investments appear unlikely to contribute to local livelihoods or poverty alleviation, as adverse impacts outweigh development opportunities (Li, 2011; Marselis, Feng, Liu, Daniel Teodoro, & Hubacek, 2017; Schoneveld, German, & Nutakor, 2011; Zaehringer, Wambugu, Kiteme, & Eckert, 2018). In some cases, land-based investments have not only failed to alleviate poverty but have exacerbated it (Andersson et al., 2016; Li, 2011).

Despite an expanding literature on the implications of land-based investments on local livelihoods, systematic research at the national level is still missing. This is often due to a dearth of reliable data; studies tend to draw insights from local case studies, or regional and global inventories (see Messerli et al., 2013, Messerli et al., 2015; Oberlack et al., 2016; Scoones, Hall, Borras Jr, White, & Wolford, 2013). However, information at these scales does not adequately inform national land policy (see also Kaag & Zoomers, 2014). Local case studies are often not generalizable (Anseeuw et al., 2012; Messerli et al., 2015; Zoomers et al., 2016) and previous studies overemphasized problem-oriented rather than solution-oriented cases (De Schutter, 2011; Messerli, Andreas, Markus, Thomas, & Oliver, 2013). In Laos, most studies focus on "hotspot" cases, or large-scale deals with reported conflicts, which underscores negative effects (e.g. Baird, 2010; Kenney-Lazar, 2012; LNRRIC, FSS, & FER, 2009; Mcallister, 2015). Meanwhile, regional and global data accuracy is low, as it is often collected through crowdsourcing and lacks ground-truthing (Edelman, 2013; Messerli et al., 2015; Oya, 2013). This may lead to misinterpretation of impacts (Cotula et al., 2014; Scoones et al., 2013; Zoomers et al., 2016). While literature on land-based investments has focused on large-scale investments (>200ha) (Anseeuw et al., 2012), recent work has highlighted the diversity in scale and scope of investments (Cotula et al., 2009; Friis & Nielsen, 2016; Xu, 2018). To generate a more complete picture of implications of land-based investments, analysis should include a wider range of sizes of deals in terms of land acquired. Land-based investments in the Global South broadly encompass agriculture, mining, and infrastructure development. Our analysis specifically focuses on those for agricultural production, and we include all land deals regardless of the amount of land acquired. To provide robust evidence on land-based investments and support policy making (Kaag & Zoomers, 2014; Messerli et al., 2015; Scoones et al., 2013), we analyzed national datasets alongside spatial data on land-based investments and their implementation processes.

The Government of Laos (GoL) – in line with the World Bank's argument for increased agricultural productivity (Deininger et al., 2011) – began promoting land-based investments in the 2000s as means for rural development and poverty alleviation (GoL, 2004). By the mid-2000s, deals skyrocketed and today, approximately 0.6 million hectares have been granted to domestic and foreign investors. Laos presents a unique case, with detailed geospatial national quantitative and qualitative data that cover the wide range of deals (small-, medium- and large-scale) that exist (Hett et al. forthcoming). We formulated three hypotheses to test the GoL's proposition that land-based investments for agricultural production alleviate poverty in rural villages:

1) Stronger change in village-level poverty rates occurs in the villages affected by land-based investments compared to the non-affected villages.
2) The rates of poverty change in remote villages affected by land-based investments are stronger than the ones in remote non-affected villages.
3) The association between land-based investments and village-level poverty is determined by the type of investment, degree of consent given by affected villagers to land clearing, the extent of farmland loss, and whether households who lost land were compensated. Livelihood outcomes from land-based investments include positive and negative impacts (see Baumgartner et al., 2015; Jung, 2018; Oberlack et al., 2016). They are context specific (Edelman, 2013; Messerli et al., 2014; Robertson & Pinstrup-Andersen, 2010; White et al., 2012) and depend on deal type (Chiarelli, Rosa, Rulli, & D'Odorico, 2018; Deininger et al., 2011; Hallam, 2009) and implementation processes (McCarthy, 2010). Adverse impacts could be minimized to an extent through consultation with affected villagers before implementation (De Schutter, 2011; Titche, 2017).

The paper proceeds in five parts. The second section provides a description of the datasets and methods. This is followed by results of our analysis and a discussion related to the hypotheses above. We conclude with novel, policy-relevant insights on how land-based investments associate with village-level poverty reduction.

2. Materials and methods

2.1. Data sources

2.1.1. Data on land-based investments for agricultural production

We use data from the 2017 Lao National Land Concession Inventory (LCI). The LCI was created with government national and sub-national data across sectors between 2016 and 2017. The LCI includes quantitative data on the characteristics of deals, and qualitative data on implementation processes (Table 1). All deals by domestic and foreign investors (area granted per deal ranging from <1 to 50,000ha) are included in the LCI and cover 593,357ha (Table 2) across 777 deals. However, 246 of these were no longer active at the time of data collection meaning they never started implementation, ceased operation during the contract period, completed their contract, or concluded operations for another reason. Therefore, only 531 active deals (those listed as operational, start-up phase, not yet started, or stagnant) were included in this analysis. These 531 deals span a granted area of 435,732ha, of which 285,021ha had been implemented by 2017, and are located in 1402 villages (hereafter referred to as "affected or targeted villages"). The majority of deals in Laos are small-scale in terms of land acquired; 67% (337 deals) of active deals have granted areas per deal of <200ha, 8% (40 deals) are <10ha, and only 5% (27 deals) are >5000ha. In contrast, most deals included in global analyses are large-scale, or >200ha per deal (Nolte et al., 2016). Qualitative LCI data relates to implementation processes and experiences on the ground and covers 179 deals that account for 196,880ha of implemented area and 305 affected villages in nine provinces (hereafter referred to as "sampled villages"). Qualitative variables in this analysis are based on interviews with village committees (comprised of chiefs, elders, the Land Unit,

Table 1
Type of data and key variables recorded in the LCI.

Component	Key variables	Coverage
Quantitative	Type of invested commodities Origin of investors Area (granted and implemented) Year of approval Implementation status Spatial component on delineation of locations and/or land boundaries of implemented areas	Whole country (18 provinces)
Qualitative	Legal compliance Environmental impacts Economic impacts Social impacts	9 provinces: **North**: Oudomxai, Luang Prabang and Xieng Khouang. **Central**: Vientiane province, Khammouane and Savannakhet. **South**: Saravan, Sekong and Attapeu

Table 2
Overview of deals included in analysis by commodity, business models, number of affected villages, and deals sampled for qualitative aspects.

Group of commodities	Business model				Number of affected villages	Number of deals sampled for qualitative assessment
	Area granted in ha (# deal)					
	Total	Concession[b]	Lease	1 + 4 contract farming[c]		
Rubber	199,099 (164)	189,894 (145)	51 (4)	9154 (15)	552	63
Pulpwood	92,851 (20)	92,850 (19)	1 (1)	0	174	13
Flex crop[a]	84,586 (38)	84,586 (38)	0	0	263	15
Livestock	14,915 (104)	14,781 (99)	135 (5)	0	128	39
Fruit	14,725 (25)	14,725 (25)	0	0	46	12
Coffee or tea	10,982 (69)	10,929 (64)	53 (5)	0	93	9
Grains	2873 (26)	2869 (21)	4 (5)	0	37	5
Other	15,702 (85)	15,686 (74)	16 (11)	0	109	23
Total	**435,732 (531)**	**426,320 (485)**	**259 (31)**	**9154 (15)**	**1402**	**179**

[a] Flex crop includes sugarcane, jatropha, cassava, palm oil and oil crop (listed here in descending order by area granted per crop).
[b] Leases and concessions are similar, but they differ in terms of nature of activities, type of land on which deals are granted, and fees incurred (see Hett et al. forthcoming).
[c] "The "concession-like" model for rubber plantations is a partnership between a village and investor, where they start a rubber project together then the area is split after trees are planted. Thereafter, the investor and villagers managed their portions of the plantation separately. The trees and land that belong to the investor are considered concessions for which investors paid fees and taxes to the GoL (see Hett et al. forthcoming).

Forester, and Youth Union and Women's Union representatives) in affected villages (see Hett et al., 2018, in press).

2.1.2. Poverty data

Poverty has multiple facets, thus many factors contribute to poverty reduction (Sachs, 2005). Poverty can be measured in numerous ways at different scales from the national to household. Two common approaches to measure poverty include the monetary approach, which focuses on household income, consumption and expenditure (UN, 2017), and the non-monetary approach, i.e. the Multidimensional Poverty Index (MPI), which includes health, education and living standards (UNDP, 2010). The measure used in this analysis builds on the monetary approach with a poverty line set by net income per person per month, using per capita expenditure (including the value of home production) needed to purchase 2100 Kcal per person per day, and non-food items as a proxy (Epprecht, Minot, Dewina, Messerli, & Heinimann, 2008). The 2005 poverty rate[2] at the village level was estimated based on data from the 2002–2003 Lao Expenditure and Consumption Survey (LECS) (see NSC, 2004) and the 2005 Population and Housing Census (PHC) (GoL, 2006). The 2015 poverty rate was calculated based on data from the 2012–2013 LECS (see Pimhidzai, Fenton, Souksavath, & Sisoulath, 2014) and the 2015 PHC (see Coulombe, Epprecht, Phimhidzai, & Sisoulath, 2016). Poverty rates at the village level were based on results of poverty analyses in 2005 (see Epprecht et al., 2008) and 2015 (see Epprecht et al., 2018). Analyzing this data alongside LCI outcomes allows us to estimate the association between land-based investments and poverty across the country.

2.2. Data analysis

2.2.1. Poverty in villages targeted by land-based investments

To better understand the association between land-based investments and poverty in affected villages, we performed a two-step analysis: First, we examined the extent to which land-based investments targeted poor areas by identifying poverty status before a deal was established. We characterized this association by commodity type, origin of investor, size, and year of approval. Because most deals were granted after 2005, the 2005 village poverty rates were used as the poverty status before deals were established. Thirty-three of the 531 deals (representing an area of 95,393ha) were granted before 2005, but were included because most (25 deals, 44,688ha) were approved between 2002 and 2004, and data for the 2005 poverty was collected between 2002 and 2003. Although other deals were approved before 2002, land allocation by the government to these took place in the mid-2000s or later. Second, to explore how deals were associated with poverty, we calculated the change in poverty rates in affected villages since a deal was established (between 2005 and 2015). We ran a two-tailed *t*-test in Stata (StataCorp, 2013) to compare the mean 2005 and 2015 poverty rates and mean of change in poverty between 2005 and 2015 in affected versus non-affected villages, and also to compare between remote affected and remote non-affected villages. We define remote villages as villages with a travel time to the nearest provincial capital of >2.65 h (i.e. longer than the mean travel time from villages to the nearest provincial capital in Laos). Additionally, we ran a one-way ANOVA analysis to compare the mean 2005 poverty rates in villages targeted by commodity type, and a linear and linear-log regression to compare the mean 2005 poverty rates in affected villages by year of deal approval and size of deal respectively. The models are written as:

$$\underset{\text{model}}{\overset{\text{Linear}}{:\ Y_i = \beta_0 + \beta_i X + \varepsilon}} \qquad \underset{\text{model}}{\overset{\text{linear} - \log}{:\ Y = \beta_0 + \beta_l \log X + \varepsilon}}$$

Y is the 2005 poverty rates in affected village
X is the year of deal approval or size of deal
β is the respective regression coefficient or intercept
ε is the error term

2.2.2. Determinants and contextual factors that lead to poverty alleviation

2.2.2.1. Explanatory variables. We developed multiple regression models to explore determinants and contextual factors that influence the association between land-based investments and poverty in affected villages. Table 3 presents the explanatory variables included in our multiple regression models.

2.2.2.2. Multiple regression models. We used the analysis of covariance (ANCOVA) regression method to develop two models. The first model

[2] The national poverty line in Laos was approximately 13USD/person/month in 2005 and 25USD/person/month in 2015.

Table 3
Explanatory variables included in regression models.

Variable name	Theoretical justification	Measurement	Type of variable	Categories	Data source
Type of commodity	The commodity type shapes implications for local resources and livelihoods. Different agricultural commodities require different inputs, so environmental effects vary. For example, water consumption in rubber and flex crops, and horticulture and floriculture tends to be higher than in grain cultivation, so environmental effects may be more obvious (see Borras Jr, Fig, & Suarez, 2011; Chiarelli et al., 2018; Zaehringer, Wambugu, et al., 2018). Employment is one of the most immediate benefits local people can access, and is shaped by the commodity type (Hallam, 2009; Meinzen-Dick & Markelova, 2009). For the production of certain commodities, capital inputs can substitute for labour (see Deininger et al., 2011; Nolte & Ostermeier, 2017), so a capital intensive commodity creates fewer jobs per hectare than a labour intensive commodity.	Type of commodity invested under deal	Categorical	1) Rubber, 2) Flex crops, 3) Pulpwood, 4) Coffee or tea, 5) Grains, 6) Fruit, 7) Livestock and 8) Other.	LCI
Origin of investor	Oya (2013) stresses that livelihood outcomes also depend on an investor's level of commitment to local development, and argues that domestic investors likely have higher interest in development.	Type of investment based on business registration	Categorical	1) Domestic, 2) Foreign and 3) Lao Joint Venture with foreign investor	LCI
Size of deal	Larger-scale deals may cause greater environmental effects as they consume more resources (e.g. land and water) and require higher inputs (e.g. agrochemicals), but at the same time, local people may enjoy greater employment benefits from these deals as they have a higher labour demand (Andersson et al., 2016; Davis, D'Odorico, & Rulli, 2014).	Implemented area in hectare per deal	Continuous	NA	LCI
Number of years a deal has been operating up to 2017	It is expected that labour demand will increase once a deal reaches operational phase (Baird, 2011; Deininger et al., 2011; Friis et al., 2016). However, some studies find that high labour was required in development phases then declined significantly in operational stages (see Oberlack et al., 2016). However, it is difficult to define whether a deal is fully operational. This is particularly true in Laos where many deals do not develop all of the land granted by the time other areas have reached the operational stage. Therefore, in this analysis, we use number of years that a deal has been operating before the time of data collection as a proxy for stage of operation. Most deals were granted between 2004 and 2009 – nearly 70% of granted deals were active, and more than 70% of those were in the operational phase as of 2017 (Hett et al. forthcoming).	Difference between the year a deal was approved and data collection was conducted	Continuous	NA	LCI
Consent prior to land being cleared	McCarthy (2010) argues that livelihood outcomes depend on how smallholders are integrated into deal processes, whether on a voluntary or a coercive basis. Some argue that negative impacts can be mitigated and benefits can be maximized, through a Code of Conduct (CoC) (De Schutter, 2011; Titche, 2017). Key principles under a standard CoC include: 1) Free Prior Informed Consent (FPIC) obtained from impacted people in the land acquisition process, 2) a proper Environmental Impact Assessment (EIA) that is carried out prior to land clearance,	Interview with affected villages regarding FPIC principles	Categorical	Consent was not given, and Consent was given	Sampled data on qualitative aspects
Compensation to the households who lost farmland		Whether or not households who lost farmland were compensated	Categorical	1) No land lost to deal, 2) No compensation, and 3) Households who lost farmland were compensated	Sampled data on qualitative aspects

(*continued on next page*)

Table 3 (*continued*)

Variable name	Theoretical justification	Measurement	Type of variable	Categories	Data source
	and 3) fair compensation for land and resource lost (von Braun & Meinzen-Dick, 2009; FAO, 2012; FAO et al., 2010; Franco, 2014).				
Proportion of households that lost farmland land to deal	Loss of farmland or land dispossession is a fundamental impact of land-based investments; thus impacts to local livelihoods depend on the degree of	Share of households in an affected village who lost individual farmland to a deal	Continuous	NA	Sampled data on qualitative aspects
Extent of land dispossession	dispossession (De Schutter, 2011; Deininger et al., 2011; Hall, 2011; Franco, 2014).	Average amount of farmland lost per affected household. We calculated by dividing the total amount of land loss in the affected villages by the number of households with land loss	Continuous	NA	Sampled data on qualitative aspects
Control variable					
Accessibility	Epprecht et al. (2008) suggest that poverty in Laos is influenced by geographical conditions, with higher poverty rates in remote villages, especially highland areas. At the same time, deals in proximity to a provincial capital may have better access to markets, public services, and transportation and communication networks. To control for this, we included an accessibility variable measured by travel time (in hours) from the area under implementation to the nearest provincial capital. The mean travel time was calculated in ArcGIS (ESRI, 2011) using 2015 data (Epprecht et al., 2018) following the approach suggested by Epprecht et al. (2008).	Mean travel time in hours from a deal to the nearest provincial capital	Continuous	NA	Calculation in GIS
Population density in the affected village	It is claimed that the impacts of land-based investments vary across geographical and socio-economic contexts of the affected villages. For instance, the land-based investments may cause greater extent of land dispossession in the cases with high population density (Baumgartner et al., 2015; Zoomers et al., 2016). The data on population density per village territory is based on the 2005 PHC census (GoL, 2006).	Size of village population per total village territory	Continuous	NA	2005 PHC

Note: NA = Not applicable.

examines changes in poverty rates in affected villages between 2005 and 2015 alongside commodity type, origin of investor, size of deal, and years in operation. This model includes all 1402 villages affected by 531 deals based on the national concession inventory data. The second model explores contextual factors that enable or hinder a deal to alleviate poverty. This model drew from 305 villages affected by 179 deals. In the second model, we kept all explanatory variables from the first model and included key qualitative predictors including consent given by affected villagers, proportion of households who lost farmland, average farmland lost per household, and compensation for land lost. The multiple regression model is written as:

$$Y_i = \beta_0 + \beta_i X_i + \beta_j D_j + \beta_k D_k + \beta_l (D_j D_k) + \varepsilon$$

Y_i is the change in poverty rates between 2005 and 2015 in affected village i
X_i is the continuous independent variable i
D_j is the categorical variable j
D_k is the categorical variable k
β is the respective regression coefficient or intercept
ε is the error term

We tested for multicollinearity and, therefore, excluded the pulpwood deals from the models.

3. Results

3.1. Poverty status and trends in affected villages

3.1.1. Village poverty rates

The mean poverty rate (2005) in affected villages before a deal was significantly lower than that in non-affected villages, $t(1845) = -1.80, p < 0.10$ (Table 4). Most deals targeted lowlands in the west of the country along the Mekong River and major transportation routes where low poverty rates already occur. The 2005 poverty rates varied across affected villages depending on types of deals, $F(7, 1353) = 36.45$, $p < 0.001$. Deals in pulpwood, flex crops and rubber plantations targeted poorer areas. Villages with the lowest poverty rates were targeted by coffee or tea plantations ($n = 90$) (Table 5 and Fig. 1). A higher poverty rate (44%, $SD = 19$) occurred in areas targeted by foreign investors ($n = 933$), as compared with domestic ($n = 284$) and joint ventures ($n = 144$), with poverty rates of 32% ($SD = 17$) and 33% ($SD = 15$) respectively, $F(2, 1358) = 64.22$, $p < 0.001$.

Two interesting linear trends emerge from linear regression models on poverty rates in targeted villages before the establishment of deals. First, poverty rates in targeted villages before a deal differed across year

Table 4
Results of two-tailed *t*-test and descriptive statistics for village-level poverty rates in 2005 in affected and non-affected villages.

	Affected villages			Non-affected villages			*t*-value	Degree of freedom	*p*-value
	Mean	SD	N	Mean	SD	N			
Village level poverty rates in 2005	40	19	1361	41.28	17.41	6734	−1.80	1845	0.07

Table 5
ANOVA comparisons of village-level poverty rates in 2005 by type of commodity.

				Tukey's HSD Comparisons						
Type of commodities	*n*	Mean	SD	Coffee or tea	Flex crop	Fruit	Grain	Livestock	Pulpwood	Rubber
Coffee or tea	90	20	16							
Flex crop	168	46	14	***						
Fruit	45	35	18	***	**					
Grain	33	38	14	***	*	ns				
Livestock	125	40	18	***	*	ns	ns			
Pulpwood	261	47	20	***	ns	***	***	***		
Rubber	546	42	18	***	ns	ns	ns	ns	***	
Other	93	26	18	ns	***	**	**	***	***	***

$F(7, 1353) = 36.45$ and p-value <0.001.
Note: * coefficient is significant at the 10 percent level, ** at the 5 percent level, and *** at the 1 percent level; ns = not significant.

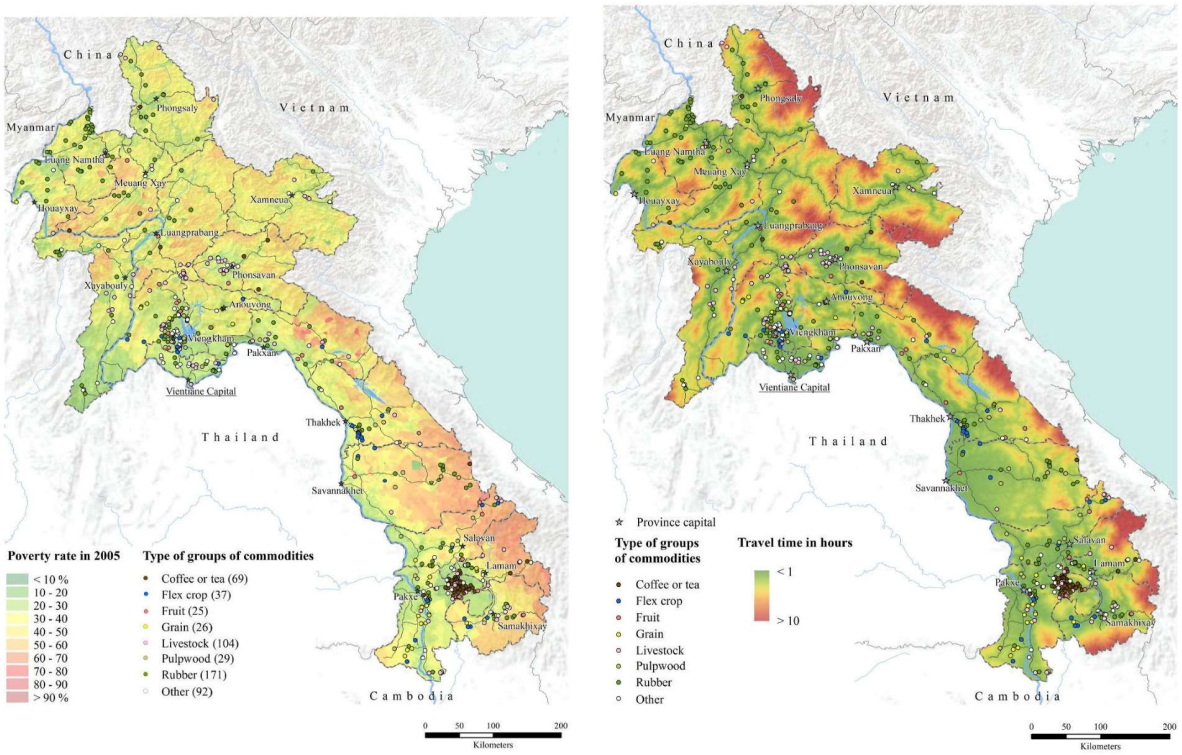

Fig. 1. Location of deal and type of commodity with 2005 village poverty rates (left), and degree of accessibility from implemented areas to nearest provincial capital (right).

of approval ($F(19, 1371) = 9.68, p < 0.001$), with R^2 of 0.12. Deals were first established in more accessible and socio-economically better-off areas (Fig. 1), then expanded to remote areas with higher poverty rates (Fig. 2). Second, smaller deals in terms of area tend to target locations with already lower average poverty rates ($F(1, 1292) = 52.58, p < 0.001$), with R^2 of 0.04. The model indicates that with a 1% increase in area size, the poverty rate was roughly 0.03% (2.48/100) higher ($p <$ 0.01) (see Fig. 3).

3.1.2. *Poverty trends in affected villages from 2005 to 2015*

Results of the two-tailed *t*-test reveal that between 2005 and 2015, poverty rates in affected villages decreased from 41% to 28% (see Fig. 4). Although this follows the national poverty trend in Laos, the mean poverty reduction in affected villages was higher than that in non-

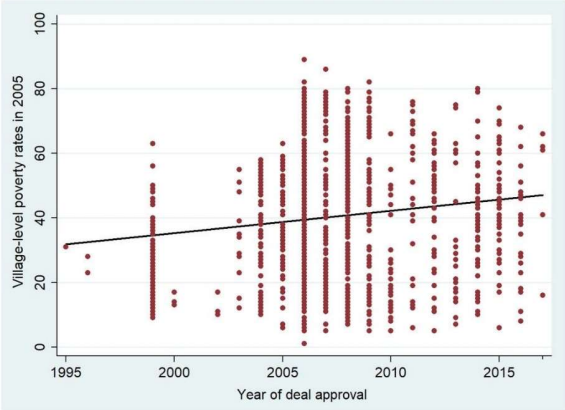

Fig. 2. Village-level poverty rates in 2005 and year of deal approval.

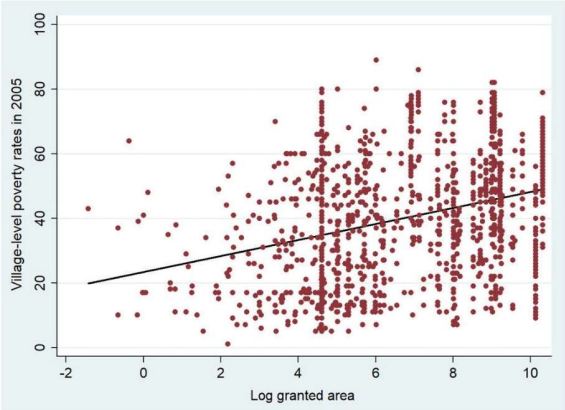

Fig. 3. Village-level poverty rates in 2005 and size of deal (granted area).

affected villages, $t(1,800) = -2.59$, $p < 0.05$ (Table 6). It was also higher than the national mean poverty reduction (16%) over the same period. Furthermore, the mean 2015 poverty rate after the establishment of deals in affected villages was lower than that in non-affected villages, $p < 0.001$. Regarding the rates of poverty change in remote affected and remote non-affected villages, remote affected villages showed a stronger mean of poverty reduction, $t(340) = -2.14$, $p < 0.05$ (Table 7).

Despite an overall drop in poverty rates in affected villages between 2005 and 2015, not every village followed this trend. Poverty rates in approximately 17% or 220 affected villages increased over this period.

3.2. *Poverty trends between 2005 and 2015 in affected villages by deal type*

Results from the multiple regression model based on national concession data suggest that poverty reduction was associated with deal type; however, predictors in this model explained only 8% of the variation ($R^2 = 0.08$, $F(24, 1230) = 4.29$, $p < 0.001$) (Table 8). A higher level of poverty reduction ($\beta = 32\%$) over this period occurred in villages with domestic deals that established rubber plantations than those with domestic deals for coffee or tea plantations ($\beta = 7\%$, $p < 0.10$). Results further show that poverty reduction in villages affected by domestic deals (17%) was stronger ($p < 0.01$) than in those affected by foreign and joint venture deals (27%, $p < 0.01$). However, our results suggest that poverty reduction in villages with domestic deals was not always stronger than for other deal types (Table 8). In cases of flex crops, coffee or tea, grain and livestock, poverty reduction in villages with domestic deals (18%, 7%, 11% and 27% respectively) was significantly lower than that in villages with foreign deals (46% ($p < 0.01$), 33% ($p < 0.05$), 52% ($p < 0.05$) and 65% ($p < 0.01$) respectively).

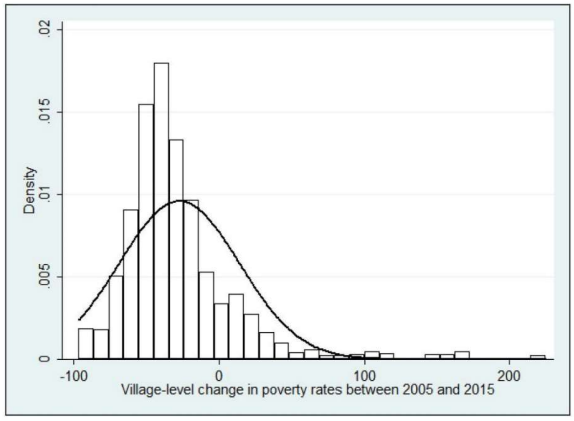

Fig. 4. Probability density of village-level change in poverty rates between 2005 and 2015.

Our model suggests that poverty reduction is positively associated with deal size, regardless of the commodity type and investor origin. Although the effect is relatively small – with a 1 ha increase in size of implemented area, poverty rates drop by 0.001% ($p < 0.01$). Results further show that poverty reduction is associated with the location of deal; with every 1 h increase in travel away from the nearest provincial capital, poverty rates dropped by 3% ($p < 0.05$). Poverty reduction, however, is not associated with years in operation or village population density.

3.3. *Poverty trends between 2005 and 2015 in sampled villages*

3.3.1. *Consultation, consent, land dispossession and compensation*

Qualitative results show that most villages claimed they were consulted (84%, $n = 255$) prior the government granting land to a deal. Only 16% ($n = 50$) of villages reported no consultation or that they did not know whether one took place. However, we found that FPIC criteria consent was given in only 124 (42%) villages. Other villages ($n = 181$) reported that consent was either given without meeting FPIC criteria, not given, not asked for, or they could not recall if it was given. Village involvement in consultation varies – 67% ($n = 171$) of 255 villages consulted claim that the process involves the whole village; while the remainder ($n = 84$) claim that only village committees or chiefs are involved.

Our results show that consultations range from notification to official negotiation. While 8% ($n = 26$) of villages consulted state that they were simply informed of the deal, 92% ($n = 229$) negotiated to some degree for a concrete benefit. Most negotiated issues center on socio-economic benefits (e.g. employment, cash for village development, or infrastructure). Ninety-nine villages raised socio-economic concerns during consultation, while 88 negotiated location of land for allocation and 79 deliberated the size of a deal. Another 52 villages affirmed that they were able to negotiate for some aspect of compensation.

Our results suggest that not every deal caused individual land dispossession in an affected village. While 3 villages could not recall whether households lost land to a deal, around half of the villages ($n = 150$) claimed that no household lost farmland. In cases where households did lose farmland ($n = 152$), most villages ($n = 93$) reported less than 25% of households lost land, and only 32 villages said that at least half of the households lost land. Size of loss ranged from <1ha to 13ha,

Table 6
Percentage of village-level change in poverty rates between 2005 and 2015 in affected and non-affected villages.

	Affected villages			Non-affected villages			*t*-value	Degree of freedom	*p*-value
	Mean	SD	N	Mean	SD	N			
Mean 2015 poverty rates	28	17	1364	31	16	6539	−6.56	1912	<0.001
Percentage of village-level change in poverty rates in the period of 2005–2015	−25	64	1360	−20	55	6710	−2.59	1800	<0.05

Table 7
Percentage of village-level change in poverty rates between 2005 and 2015 in remote affected and remote non-affected villages.

	Remote affected villages			Remote non-affected villages			*t*-value	Degree of freedom	*p*-value
	Mean	SD	N	Mean	SD	N			
Percentage of village-level change in poverty rates in the period of 2005–2015	−29	32	240	−24	46	2609	−2.14	340	<0.05

with a median of 2ha. A number of households (34%, $n = 44$) who lost land did not lose all of their own land, but a large part.

Only half the villages that lost land ($n = 75$) stated that they were monetarily compensated. However, our results reveal that a significant number of villages (87%, $n = 132$) were able to access new farmland through local channels that became available in response to loss from a deal. The most frequent channel ($n = 112$) was through household or village reserve land; while 27 other villages cleared nearby forest for farmland, and 34 villages purchased or rented land from neighboring villagers.

3.3.2. Multiple regression results

The second multiple regression model (Table 9) yielded slightly different results from the first, particularly concerning consent, land dispossession, and compensation. A low number of observations for some commodity types, e.g. coffee or tea ($n = 16$), grain production ($n = 11$), and joint ventures ($n = 36$), could explain this difference. Predictors included in the second model explain 19% of the variation ($R^2 = 0.19$, $F(29, 292) = 2.34$, $p < 0.001$).

First, poverty reduction in all sampled villages did not differ significantly across commodity type. Second, an 18% lower poverty rate occurred in villages with domestic deals ($\beta = 50\%$) compared to foreign deals ($p < 0.10$). In the case of joint ventures, poverty reduction was 23% lower than in villages affected by domestic deals, but this difference was not significant ($p = 0.10$). Flex crop and livestock deals led to higher poverty reduction when there was a foreign investor versus domestic.

Third, deal size is not an influential factor (as suggested by the first model). Rather, land loss is negatively associated with poverty reduction; specifically, with every 1% increase in the proportion of households who lost farmland, poverty reduction dropped by 0.27% ($p < 0.05$). Furthermore, when deals caused individual land dispossession, poverty reduction was lower compared to cases without individual land loss. If a household lost farmland and was not compensated, poverty reduction was 29% lower than those where no loss occurred ($p < 0.05$). While in villages where households received compensation, poverty reduction was 15% lower than without individual land dispossession, but this effect was not significant ($p = 0.26$).

Fourth, village consent was not a sole determining factor for the degree of poverty reduction in sampled villages ($p = 0.37$). Although our results do not show association between poverty reduction and consent, our model suggests that consent is related to compensation. Thus, stronger poverty reduction ($\beta = 27\%$, $p < 0.10$) occurred in cases where households who lost farmland gave consent and were compensated (compared to no household land loss or no consent sought).

Finally, as with the first model, the second model suggests that the more remote a deal the greater the effect on poverty – a 1 hour increase in travel time from the nearest provincial capital to a deal leads to a reduction in poverty by 4% ($p < 0.10$).

4. Discussion

4.1. How might land-based investments alleviate poverty?

Over the last decade, Laos has progressed in terms of economic growth and national poverty reduction. This was primarily driven by the natural resource sector (Menon & Warr, 2013; World Bank, 2016) and thus investment in land. Our results reveal decreased poverty rates in affected villages between 2005 and 2015. While this follows national poverty trends over the same period (Coulombe et al., 2016; Epprecht et al., 2008, 2018), higher levels of poverty reduction occurred in affected villages than non-affected villages. Results support our first hypothesis that *stronger change in village-level poverty rates occurs in the villages affected by land-based investments compared to the non-affected villages*, and therefore contrast studies that argue land deals only increase poverty in developing countries (Andersson et al., 2016; Li, 2011; Scheidel et al., 2013). However, our results indicate that among affected villages, more significant poverty reduction resulted when farmland was not lost. In cases of individual farmland loss when access to alternative land or employment were limited, poverty rates increased. We instead offer a more nuanced range of possibilities and acknowledge that long-term impacts on livelihoods in Laos remain unclear. Further investigation is needed to examine whether villagers become more vulnerable long-term, once deals are fully operational (Nolte et al., 2016; Oberlack et al., 2016). Although many deals are operational in Laos, most have yet to develop all land initially granted by the government. In this regard, long-term impacts from a deal are not fully predictable (Nolte et al., 2016). Smallholders may be still able to use land or forest that was granted to a deal for agricultural production or forest product collection, but livelihoods could decline if investors clear all land available to them. Compensation could sustain livelihoods of affected villagers, depending on the amount paid for lost land (Colchester et al., 2013); however, several studies document how land deals in Laos cause resource and environmental degradation (Friis & Nielsen, 2016; Global Witness, 2013; Obein, 2007; Hett et al. forthcoming), for which compensation does not mitigate.

Land-based investments may push people to out-migrate, especially those who lose land on which their livelihood depends (Andersson, Lawrence, Zavaleta, Manuel, & Guariguata, 2016; Chilombo, Fisher, & van Der Horst, 2019). At the same time, others may migrate in to seize jobs or other opportunities offered by a land deal (Gironde et al., 2014; Widianingsih, David, Pouliot, & Theilade, 2019). In this regard, the poor may be pushed out of a village, resulting in what appears to be a reduction in poverty. While it is beyond the scope of this paper to explore links between demographic changes and poverty reduction in the affected villages, this is an important area for future inquiry. The change in poverty rates measured through a monetary approach may also fail to capture the full picture of impacts to local livelihoods. Deals may offer opportunities for cash income, e.g. through off-farm

Table 8
Effects of deal type on poverty reduction in all villages affected by land deals in Laos.

	Coefficients	Standard error	t - value	p - value
Main effects				
a constant	−32.794	5.056	−6.490	<0.001***
Domestic rubber deals	reference			
Domestic flex crop deals	14.907	9.424	1.580	0.114
Domestic coffee or tea deals	25.934	11.179	2.320	0.021**
Domestic grain deals	21.588	14.318	1.510	0.132
Domestic fruit deals	−1.518	14.330	−0.110	0.916
Domestic livestock deals	6.203	7.168	0.870	0.387
Domestic other crop deals	3.977	8.392	0.470	0.636
Domestic deals	reference			
Foreign deals	17.028	5.323	3.200	0.001***
Joint-venture deals	26.723	6.495	4.110	<0.001***
Area developed in hectare	−0.001	0.000	−3.570	<0.001***
Number of years a deal has operated	−0.007	0.008	−0.870	0.382
Accessibility	−2.469	1.016	−2.430	0.015**
Population density	−0.005	0.004	−1.150	0.251
Interaction effects				
Type of commodities # domestic	reference			
Flex crop # foreign	−27.911	10.246	−2.720	0.007**
Flex crop # joint venture	25.561	41.782	0.610	0.541
Coffee or tea # foreign	−25.965	12.570	−2.070	0.039**
Coffee or tea # joint venture	13.945	23.533	0.590	0.554
Grain # foreign	−40.996	18.944	−2.160	0.031**
Grain # joint venture	−17.170	25.178	−0.680	0.495
Fruit # foreign	9.602	16.554	0.580	0.562
Fruit # joint venture	−19.533	32.284	−0.610	0.545
Livestock # foreign	−38.007	10.575	−3.590	<0.001***
Livestock # joint venture	125.037	41.298	3.030	0.003***
Other crop # foreign	18.135	11.151	1.630	0.104
Other crop # joint venture	−15.574	22.415	−0.690	0.487
Number of observations =	1248		R^2 =	0.08
F(24, 1223) =	4.32		R^2 – adjusted =	0.06
p – value	<0.001***			

Note: * coefficient is significant at the 10 percent level, ** at the 5 percent level, and *** at the 1 percent level. The Coefficients: Negative (−) indicates an increase from the reference value (meaning that there was stronger poverty reduction), and positive (+) indicates a decrease from the reference value (meaning that there was lower poverty reduction).

employment or out-grower schemes (e.g. Ahmed et al., 2019), while the local villagers may be evicted from their farmland and associated resources, resulting in adverse livelihood outcomes in terms of, for example, food security (Porsani et al., 2019; Yengoh & Armah, 2015).

Characteristics specific to the Lao context explain some correlations observed between deals and poverty reduction. First, as elaborated in section 2.1.1, deals in Laos are generally small-scale, which could result in smaller-scale livelihood and environmental impacts when compared with the impacts of large-scale deals that many global studies focus on, at least in the short-term. Our results also indicate that not every deal causes farmland dispossession. Villagers might lose communal forest, but may value forest less than agricultural land for their livelihoods. In other cases, households did not lose all their land, and most households who lost land claimed they accessed new farmland through either reserve agricultural land, borrowing from relatives, purchasing new land, or clearing nearby forest. Thus, a number of affected villagers continued to practice smallholder agricultural for subsistence or commercialization as a primary source of livelihood. In this regard, additional opportunities such as employment could supplement household incomes in affected villages. However, land-based investments may increase social differentiation based on who is able to engage in opportunities offered by deals (Gyapong, 2019; Ahmed et al., 2019). For example, out-grower schemes can radically alter social relations among smallholders in terms of access to land and cash, and create dependencies of contract farmers on firms (see Adams et al., 2019). In the Lao context, particularly the northwest provinces, targeted for rubber cultivation, deals influence smallholder ability to transition from subsistence to market-oriented production. Most rubber deals in this region apply a concession-like model, specific to Laos called "one plus four", meaning villagers contribute one part (land) and investors contribute four parts (technology, finance, labour and access to markets). Thus, villagers do not work their land, but if they choose to, the company will pay for labour. Under this model, villagers and investors share rubber tree dividends three years after the plantation was established (Nanhthavong, 2012; Shi, 2008). Through this arrangement, villagers are not only able to keep some of their land, but also benefit from profit sharing. Moreover, local case studies show that these deals have increased smallholders' access to new agricultural and land markets (e.g. Friis, 2013; Friis & Nielsen, 2016; Shi, 2008). Because of this model, rubber became the region's main cash crop. In a different model often used in banana deals, villagers lease out land to investors and that cash becomes the primary source of income (Friis & Nielsen, 2016).

Despite an overall decrease in the mean poverty rate from 2005 to 2015 in affected villages, the change in poverty rates does not always follow this trend. Poverty rates in many affected villages increased over this period and some patterns emerge that link deals and this increase. Affected villages where poverty increased were those affected by deals that caused significant individual farmland loss and conflicts. Our regression model suggests that poverty reduction was less prevalent where deals caused some level of land dispossession, and rates of poverty reduction dropped significantly when the proportion of households who lost land in the village increased. More than 80% of villages where poverty rates increased were located on the Bolaven Plateau – in Champasak, Saravan and Sekong Provinces. In those areas, other studies and media have documented that deals, especially rubber and coffee plantations, evicted many villagers from their land and resources, leading to serious conflicts and resistance (see Baird, 2017; Laungaramsri, 2012; Obein, 2007; Smith, 2012). As a result, many affected villagers turn to wage labour and marginal land to sustain their livelihoods. Plantation jobs are often filled by labourers from outside affected villages, including migrants from neighboring countries (Baird et al., 2018; Obein, 2007). Meanwhile, gaining access to new land for

Table 9
Effects of deal type and implementation method on poverty reduction in sampled villages.

	Coefficients	Standard error	t-value	p - value
Main effects				
A constant	−50.071	12.471	−4.010	<0.001***
Domestic rubber deals	reference			
Domestic flex crop deals	13.013	17.182	0.76	0.449
Domestic coffee or tea deals	62.263	43.082	1.450	0.149
Domestic grain deals	−10.374	43.411	−0.240	0.811
Domestic fruit deals	1.267	22.759	0.060	0.956
Domestic livestock deals	−0.205	12.713	−0.020	0.987
Domestic other crop deals	−12.464	16.789	−0.740	0.458
Domestic deals	reference			
Foreign deals	17.585	10.163	1.730	0.085*
Joint-venture deals	22.868	13.983	1.640	0.103
Area developed (ha)	−0.001	0.001	−1.080	0.280
Number of years in operation	0.022	0.019	1.190	0.235
Accessibility	−3.611	2.085	−1.730	0.084*
Population density	−0.004	0.004	−0.910	0.361
Proportion of households that lost land	0.271	0.124	2.180	0.030**
Average amount of land lost per household (ha)	1.739	1.788	0.970	0.332
Consent not given by affected villagers	reference			
Consent given by affected villagers	9.446	10.469	0.900	0.368
No household lost land in the village	reference			
Land lost was not compensated	29.376	13.358	2.200	0.029**
Land lost was compensated	14.978	12.861	1.160	0.245
Interaction effects				
Type of commodities # domestic	reference			
Flex crop # foreign	−31.689	18.665	−1.700	0.091*
Flex crop # joint venture	No data			
Coffee or tea # foreign	−75.534	48.345	−1.560	0.119
Coffee or tea # joint venture	−62.118	53.228	−1.170	0.244
Grain # foreign	−13.642	49.938	−0.270	0.785
Grain # joint venture	−20.145	61.831	−0.330	0.745
Fruit # foreign	24.494	33.518	0.730	0.466
Fruit # joint venture	−6.846	48.674	−0.140	0.888
Livestock # foreign	−36.401	17.770	−2.050	0.041**
Livestock # joint venture	No data			
Other crop # foreign	24.853	22.139	1.120	0.263
Other crop # joint venture	−20.189	35.651	−0.570	0.572
Consent was sought # no land lost	reference			
Consent was sought # land lost was not compensated	−24.011	15.283	−1.570	0.117
Consent was sought # land lost was compensated	−27.071	13.646	−1.980	0.048*
Number of observation =	322		R^2 =	0.19
F(29, 292) =	2.34		R^2 – adjusted =	0.11
p - value	<0.001***			

Note: * coefficient is significant at the 10 percent level, ** at the 5 percent level, and *** at the 1 percent level. The Coefficients: Negative (−) indicates an increase from the reference value (meaning that there was stronger poverty reduction), and positive (+) indicates a decrease from the reference value (meaning that there was lower poverty reduction).

agricultural production is difficult in this region as much land has been claimed by multiple users – not only by smallholders, but also plantations, mines, and hydropower development since the 2000s (Delang et al., 2013).

Second, the increase in poverty may relate to economies of scale, as De Schutter (2011) points out, larger-scale investments produce at lower costs by substituting human labour with mechanical production, processing and packaging. He describes this process as a "coexistence" between large-scale and small-scale farms, meaning that the arrival of large-scale investments in the same crop already produced by smallholders leads to competition over the same market, and smallholders are less able and likely to be competitive. We see this across coffee plantations on the Bolaven Plateau.

Third, some villagers engaged in out-grower schemes through deals and were subsequently cheated by investors; this occurred in sugarcane plantations in Savannakhet province. Case studies and local media documented how villagers engaged in out-grower schemes were unable to repay credit lent by an investor. Inputs such as seedlings, fertilizer, and agrochemicals were advanced to villagers under the condition that credits had to be repaid once a crop was harvested. However, investors overcharged, and the product was downgraded, which resulted in insufficient income to repay (LFTU, 2011; Phoumanivong & Ayuwat, 2013; Times Reporters, 2016).

4.2. *What types of land-based investments are associated with poverty at the village level?*

The multiple regression models suggest that stronger poverty reduction occurred with domestic rather than foreign deals. However, rates of poverty reduction did not change based on whether consent was given or compensation was offered. Therefore, results partially support the third hypothesis: *The association between land-based investments and village-level poverty is determined by the type of investment, degree of consent given by affected villagers to prior land clearing, the extent of farmland loss, and whether households who lost land were compensated.* Some studies have pointed out that the origin of investors matters for socio-economic outcomes as they are better positioned to offer benefits in terms of capital, technology, skills and access to global markets (Fruman & Forneris, 2016). However, we found that outcomes across domestic and foreign deals instead relate to their implementation. Although domestic and foreign investors compete over land and resources in affected villages, reports about adverse impacts to resource access, especially farmland and forest, was less common with domestic deals. In addition, granting land for foreign deals tends to rely on a top-down approach,

without conducting a land survey. This often results in concession areas that overlap with land used for agricultural production, grazing, and collecting forest products. Because the forest is an important food and income source for rural residents in Laos (Castella et al., 2012; Der Meer Simo, Peter, & Barney, 2019), affected villagers were more likely to report negative impacts to food security from foreign deals than domestic ones. Global studies (i.e. Oberlack et al., 2016) similarly observe more adverse impacts from foreign deals. Second, area initially granted to domestic investors were not fully developed, which could explain the higher rate of poverty reduction associated with domestic deals. Only one-third of the total area granted to domestic investors was developed at the time of data collection. In contrast, more than 70% of the area granted to foreign deals was developed. Adverse domestic deal impacts involving access to resources may not yet be comparable to foreign impacts. Third, in relation to benefits, most domestic investors employ Lao labourers, while foreign investors bring foreign migrants. This follows Oya's (2013) claim that foreign investors are less committed to development in host countries.

McCarthy (2010) stresses that livelihood outcomes from deals depend on the ways in which affected villagers are engaged in the establishment and implementation processes, either on a voluntary or coercive basis. While consultation and consent often do not happen (see Borras Jr & Franco, 2010; Colchester et al., 2013; Vermeulen & Cotula, 2010), seeking consent prior to clearing land could minimize adverse impacts and maximize local benefits (von Braun & Meinzen-Dick, 2009; FAO, 2012; FAO et al., 2010; Yengoh et al., 2016). Although many villagers claimed they were consulted and able to negotiate benefits including employment, monetary compensation, and infrastructure development, our multiple regression model suggests that poverty reduction in cases with and without consent was not significantly different. This supports Vermeulen & Cotula (2010) argument that the implementation of FPIC alone does not ensure sustainable livelihood outcomes from deals. In some cases, consent can turn into resistance (FIAN, 2012), and as Franco (2014) stresses, livelihood outcomes from deals are dynamic, with positive outcomes from one point in a business cycle possibly leading to adverse outcomes later.

4.3. *Where do land-based investments show stronger association with poverty reduction?*

In Laos, accessibility and poverty are linked, with higher poverty rates in more remote areas (Epprecht et al., 2008, 2018). The results of a two-tailed *t*-test, and regression models highlight an interesting trend: deals implemented in remote areas tend to have a stronger association with poverty reduction than ones in accessible areas. This supports our second hypothesis: *The rates of poverty change in remote villages affected by land-based investments are stronger than the ones in remote non-affected villages.* Because remote areas in Laos are less populated and have more land per capita, especially forested land, investors could to some extent reduce competition with smallholders over farmland. Access to new farmland is much more limited in accessible areas because land is already scarce and contested by multiple users (Nanhthavong, 2017). Zoomers et al. (2016) also suggest that granting land in more populous areas causes more adverse impacts than in less populated areas. Our results support Oberlack et al.'s (2016) argument that local livelihood outcomes from deals are not only determined by the extent of land loss, but by the proportion of land left for smallholders to sustain their livelihoods.

Our results show that in Laos, the majority of deals were not located in remote, poor areas. Many deals target land in low altitude areas along the Mekong River and its tributaries in the west. These regions benefit from better-off populations and agroecological conditions, as well as proximity to markets, public services, and transportation and communication networks (Epprecht et al., 2008; Martin & Lorenzen, 2016; World Bank, 2006). Agricultural commercialization was already present in these areas (Nanhthavong, 2017), meaning that alternative livelihood opportunities were available to affected villages. Although some deals were implemented far from provincial capitals, most targeted land in areas that border China and Vietnam. Accessible lowland, border areas minimize costs to transport inputs and outputs from a deal to domestic or international markets, and mean that investors do not need to develop transport infrastructure. Additionally, the supply of skilled labour may be more plentiful around provincial capitals.

Our results show an interesting trend in the spatial-temporal development of deals, namely their establishment began in socio-economically better-off areas, and expanded to remote areas with higher poverty. This is especially true for large-scale deals. This may be because the availability of land in accessible areas was already exhausted. Accessible land may have been occupied by early investors or smallholders expanding into intensive agricultural production systems (see Nanhthavong, 2017). In Laos in principle, only "state land[3]" can be granted for a land-based investment (GoL, 2009). In this regard, it may have been easy for the government to claim land used for local subsistence livelihoods such as shifting cultivation, and forest, which provides important ecosystem services as state land in remote areas (see Baird, 2011; Dwyer, 2007). In many remote regions of Laos, land tenure is weak and oftentimes only customary land tenure systems exist (Kenney-Lazar, 2013; Dwyer, 2017). Second, the vast availability of forests in remote areas could be an incentive for investors to target these areas. Previous research has shown that additional costs of establishing infrastructure in remote regions are often covered through income from illegal logging activities (e.g. Ingalls et al., 2018; Smirnov, 2015; Schneider, 2011). Studies in other contexts argue that land deals in remote areas act as means for controlling resources such as water and forest assets (Borras Jr, Kay, Gómez, & Wilkinson, 2012; Manahan et al., 2015; Franco, 2014). Third, the expansion of deals into remote areas may relate to the GoL's efforts to eradicate shifting cultivation and opium production in the uplands (Hanssen, 2007; Kenney-Lazar, 2013; Vongvisouk et al., 2014). The GoL blamed shifting cultivation for deforestation and resource depletion (see Lestrelin et al., 2012), citing it as a root of rural poverty (GoL, 2004). In the view of the GoL, deals could provide alternative development opportunities in upland areas, such as off-farm employment. Finally, in some cases, the expansion of deals into marginal regions may follow government strategy to control frontier areas, especially where there was conflict during colonization and the Cold War. Dwyer (2014, 400) calls this strategy a "transformation from battlefield to marketplace", in regions that were once used for opium cultivation and drug trafficking (Ishida, 2012; Shi, 2008).

4.4. *Limitations*

Results from two multiple regression models, one based on a national quantitative dataset that covers all affected villages and the other on a qualitative dataset from sampled villages, are slightly different. The first model suggests that poverty reduction varied by commodity type, but, in general, stronger poverty reduction occurred in villages with domestic deals compared to foreign and joint venture deals. However, the second model suggests that there was no association between poverty reduction and type of commodity. Instead, higher poverty reduction occurred with domestic deals compared to foreign and joint ventures, and joint ventures were not statistically significant as suggested by the first model. In the second model, the low number of observations for some types of deals, especially coffee, tea and grain production as well as joint ventures, could explain this difference. The first model shows that large-

[3] Article 17 of the Lao Constitution (revised in 2015) states that the land is a state property, and centrally managed by the government accordance to the laws (GoL, 2015). The government has the right to allocate land to an individual, household and economical organization to use, lease or concede, allocate to a state organization to utilize, while foreigners can only lease or concede the land from state (GoL, 2003).

scale deals are stronger associated with poverty reduction than smaller ones, while the second model suggests that deal size did not affect to poverty reduction. Instead, the extent of farmland lost results in lower poverty reduction. The set of deal characteristics used (type of commodity, origin of investors, and size) may not completely capture livelihood impacts. Therefore, qualitative data related to implementation helps triangulate results and provide insight into the constellation of factors that might alleviate poverty at the village level.

We acknowledge methodological limitations that may influence our findings. First, in some cases, a deal affected more than one village, however the extent of land dispossession was not available in the LCI. In this regard, the size of implemented area per affected village in our analysis refers to total implemented area per deal. The extent of land lost to a deal varies greatly from one village to another, so assuming every affected village has the same degree of impact may not reflect reality. Second, the number of years a deal has been operating, which is based on the difference between the date when the deal was approved and the date when the inventory took place (between 2016 and 2017), may not always be accurate as some investors did not develop their project immediately upon approval. Finally, there is no straightforward line to draw between affected and non-affected villages. For this analysis, we defined an affected village as a village located where a deal was implemented, in other words, where a village lost some land (either individual or communal) to a deal. But in some cases, a neighboring village may have also been directly or indirectly affected by a deal. For instance, agrochemical use on a plantation may cause water contamination and affect downstream users. In other cases, neighboring villagers benefit by, for example, working on a nearby plantation or through an out-grower scheme. Hence, treating a neighboring village as not affected may lead to imprecise explanations.

5. Conclusion

This study fills important research gaps on how land-based investments for agricultural production impact local livelihoods in the Global South. Our results show that poverty rates in affected villages decreased between 2005 and 2015. Although poverty reduction in these villages followed the national poverty trend in Laos over the same period, the reduction was greater in affected than non-affected villages. Findings suggest that villager access to farmland for agricultural production, whether subsistence or commercial, is crucial for mitigating adverse local impacts from land deals. Off-farm employment and other spillover effects are unlikely to offset land and resource loss. In cases where deals cause more farmland loss and new land is prohibitive for dispossessed households, the rate of poverty reduction was not only lower but the rates in a substantial number of affected villages increased. Our models further suggest that deals implemented in remote, poorer areas exert stronger association with poverty reduction than those located near provincial capitals. However, investors tend not to explicitly establish deals in poverty prone contexts of Laos. The majority of deals are located in more accessible lowlands with better agroecological and socio-economic conditions and where multiple users already contest land access. In this regard, policies governing land-based investments need to be revised to ensure that adequate incentives exist to attract investments to remote and poor areas. This evidence is crucial to understanding how land-based investments can contribute to poverty alleviation in Laos. From it, we suggest further research on village-level inequalities that result from land deals, specifically through non-monetary perspectives and questions of power relations and decision-making in land governance. With the planned increase of land investments under China's Belt and Road Initiative in Laos and beyond and in view of the 2030 Sustainable Development Goals, these questions are ever more pressing.

Declaration of competing interest

None'

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Pathways to human well-being in the context of land acquisitions in Lao PDR

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ABSTRACT

Land acquisitions are transforming land-use systems globally, and their characteristics and impacts on human well-being have been extensively analysed through local case studies and regional or global inventories. However, national-level analysis that is crucial for national policy on sustainable agricultural investments and land use is still lacking. This paper conducts an archetype analysis of a unique dataset on land concessions in Lao PDR to provide a national-scale assessment of the impacts of land acquisitions on human well-being in 294 affected villages. The results show that land acquisitions influence human well-being through 18 distinct pathways. These pathways describe how some land acquisitions enhance or maintain well-being, while others elicit adverse impacts or trade-offs between well-being dimensions, particularly food security, income, and livelihood resilience. They further reveal five archetypical processes that mediate the effects of land acquisitions on well-being through: (i) shifting access to land and natural resources; (ii) commercialization of agriculture; (iii) availability of development opportunities; (iv) environmental impacts; and (v) employment opportunities within and outside land acquisitions. These processes affect well-being by shaping livelihood portfolios and dependence on natural resources. The majority of land acquisitions trigger trade-offs or adverse impacts on well-being. The small number of villages where well-being increased despite the presence of land acquisitions were mainly shaped by narrow and rigid preconditions. The archetypical processes and the explanatory factors suggest that it is imperative to protect smallholders' land-use rights and to avoid large-scale deals, as their adverse impacts outweigh opportunities and are more severe than the impacts of small-scale acquisitions. Employment opportunities may provide additional cash income but should not be exclusively relied upon.

1. Introduction

Land acquisitions have become a global concern as they transform land-use systems with major impacts on human well-being (Borras Jr & Franco, 2012; Cotula et al., 2009; Nolte et al., 2016). Widespread experience of adverse impacts and processes of land acquisitions have led to a global critique of land grabbing (Borras Jr & Franco, 2012). In response, land acquisitions have been temporarily suspended over the last decade in countries such as Cambodia and Lao PDR (Hett et al., 2020; Neef et al., 2013), while state and non-state actors at local, national, and global levels search for ways to regulate them (Debonne et al., 2019). A key issue emerging from this debate is the question of how land acquisitions affect human well-being (D'Odorico et al., 2017; Oberlack et al., 2016). Using a recent, unique dataset spanning 176 land acquisitions affecting 294 sampled villages in Lao PDR, this article identifies pathways that explain the differential impacts of land acquisitions on human well-being.

Land acquisition or land deal refers to the transfer of land-use rights to domestic or foreign investors through purchase, lease, or concession by the government of a host country in the Global South (Anseeuw et al., 2012) for a variety of purposes including agricultural production, mining, infrastructure development, and conservation (Borras et al., 2012). Our analysis focuses specifically on land acquisitions for agricultural purposes. Benefits expected from land acquisitions include enhanced national agricultural production and food security through increased yield and productivity, job creation, and improved infrastructure and

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access to markets in rural areas (Deininger & Byerlee, 2011; Fitawek et al., 2020; von Braun & Meinzen-Dick, 2009). However, evidence from various countries has shown not only that these benefits have not materialized, but also that land acquisitions have undermined farmers' capacity to produce own food (Baird, 2010; Bottazzi et al., 2018) or reinforced social inequalities (Fitawek et al., 2020). Thereby, they have become a new challenge for sustainable development and a threat to human well-being in the Global South (Santangelo, 2018; Dell'Angelo et al., 2017a).

Land acquisitions and their impacts on human well-being have thus far primarily been analysed through case studies at local scales (e.g. Baird, 2011; Kenney-Lazar, 2012; McAllister, 2015), and regional and global inventories of land acquisitions (e.g. Davis et al., 2014; Rulli and D'Odorico, 2014) constructed through crowdsourcing (Messerli et al., 2015; Oya, 2013). However, analysis at the national level which is also considered important evidence and knowledge to inform the national policy for sustainable agricultural investments and land use, is still lacking. While case studies are suited to tracing detailed causal mechanisms in a highly contextualized and field-validated manner (Beach & Pedersen, 2016), they cannot provide evidence of generalizable patterns (Magliocca et al., 2018). Further, case selection bias may affect entire research fields, as cases with highly visible negative impacts, conflicts, or resistance may be more likely selected for study. Regional and global inventories provide important knowledge relating to spatial patterns but have not yet captured the implementation processes and well-being impacts due to the limited consistency and reliability of reporting (Messerli et al., 2015; Scoones et al., 2013; Zoomers et al., 2016). This study capitalises on a unique, recent dataset of land concessions and leases from Lao PDR containing information on main characteristics, agro-ecological contexts, implementation processes, and impacts of land acquisitions (Hett et al., 2018, 2020) to contribute to thorough understanding of the impacts of land acquisitions on human well-being.

The impacts of land acquisitions on well-being depend on a range of factors. Prior research has identified important factors to include the type, size, state of the acquisition (Andersson et al., 2016; Chiarelli et al., 2018; Deininger & Byerlee, 2011; Nolte & Ostermeier, 2017), prior land use (Edelman, 2013), implementation of the acquisition (De Schutter, 2011; Titche, 2017), engagement of local communities in decision making (McCarthy, 2010), and socio-ecological contexts (Kaag & Zoomers, 2014; Scoones et al., 2013). But understanding remains limited about how these factors combine in different ways, how they impact human well-being, what processes explain different well-being outcomes, and how differences in social-ecological contexts affect differences in outcomes. This is due in part to the scarcity of reliable, large sample data that capture a wide range of scale and scope of land acquisitions.

This paper bridges this knowledge gap by addressing the overall research question: How do land acquisition types, implementation processes, well-being resources, environmental impacts, and socio-ecological contexts shape human well-being outcomes in Lao PDR?

Lao PDR presents a unique opportunity to assess this research question as recent research initiatives have generated a current and comprehensive quantitative and qualitative dataset of land acquisitions. The data set provides information on a wide range of acquisitions in terms of scale and scope across socio-ecological contexts, and details their characteristics, implementation processes, and impacts. Using this dataset, this study analyses the pathways that lead to different well-being outcomes in villages affected by land acquisitions. Insights into these pathways offer critical evidence to inform national and international efforts to regulate land acquisitions.

The remainder of this paper is structured as follows. The second section offers policy context on the debates on land acquisitions in Lao PDR. This is followed by a description of the analytical framework, approach, materials, and methods in sections three and four. Sections five and six present the main findings and discussion of the results. The final section presents our conclusions and policy recommendations.

2. Land acquisitions in Lao PDR

Lao PDR is at a crossroads of whether to renew policy supporting investments in the natural resource sector or to continue the moratoria on such investments first introduced in 2007 and sustained in 2009, 2012, and 2018 (Hett et al., 2020). Investments in the natural resource sector have been a key driver of the strong economic growth experienced by the country (IMF, 2019; World Bank, 2019). Between the early 1990s and 2017, inventory data shows that approximately 1.02 million hectares were granted for 1521 land acquisitions for agricultural, mining, and hydropower development (Hett et al., 2020), bolstered by strong government support in the mid-2000s (the Government of Lao PDR (GoL, 2004)). These investments enabled natural resource extraction, resulting in alarming rates of resource degradation and environmental contamination (Koch, 2017; Open Development Initiative (OPI), 2018). Concerned by the adverse implications of these land deals, the GoL issued several moratoria beginning in 2007 (e.g. GoL, 2012, 2007). From the GoL's perspective, suspension of new investments in tree plantations and certain large-scale mineral activities was intended to eliminate so-called "bad investments" that generate little benefit for the country but create significant adverse impacts on the local environment and livelihoods. To this end, the GoL instructed relevant ministries to assess the quality of all existing investments to inform appropriate regulations for existing and new investments. However, it may be a challenge for the GoL to differentiate good from bad investments, as many investments in Lao PDR have yet to generate profits or benefits (Baird, 2020). With limited revenue streams, the GoL continues to face trade-offs between attracting private sector investment to support economic development and protecting the country's natural endowments and local livelihoods (Vientiane Times (VT), 2017a, 2017b, 2019). As of 2018, the GoL has extended the suspension of new investments in these sectors (GoL, 2018a, 2018b), partly because the national revenue that the GoL expects from land deals e.g. through land concession and lease fees are likely to be less significant, and due to concerns for human well-being.

3. Concepts and analytical framework

3.1. Human well-being

Definitions of human well-being range from capabilities and functionings of a person's being and doing to freedom (Alkire, 2007; Sen, 1993). In this paper, we define well-being as, "the interplay between the resources that a person is able to command; what they are able to achieve with those resources, and in particular what needs and goals they are able to meet; and the meaning that they give to the goals they achieve and the processes in which they engage" (McGregor, 2007, p. 317). Well-being is comprised of objective dimensions, referring to socio-economic materials including food security, income, health, safe water, shelter, etc., and subjective dimensions, assessed as how a person values her or his being and doing, such as through self-respect, social integration, and freedom (Gasper, 2007; Sen, 1993). Based on this, well-being can be considered in three main components: i) well-being resources refer to the assets based on which households create their livelihoods (Chambers & Conway, 1992); ii) well-being outcomes refer to the outcomes for meeting basic needs and quality of life (Dawson & Martin, 2015); and iii) the value and meanings that a person ascribes to well-being outcomes (Dawson & Martin, 2015). Our paper focuses on changes in objective well-being resources and outcomes, which are also important preconditions for subjective well-being in the Lao context (Gasper, 2007; Korsgaard, 1993). At this time, data regarding values and meanings are limited.

In the Lao context, where rural livelihoods are largely based on smallholder agriculture (Lao Statistics Bureau (LSB), 2016; Nanhthavong, 2017), we assess well-being outcomes by focusing on food security, income, and livestock production. Food security and income are not

only the centre of the global debate on implications of land acquisitions in the Global South (Baumgartner et al., 2015; White et al., 2012; Zaehringer et al., 2018), but they are also fundamental elements of human well-being. Korsgaard (1993) suggests that access to adequate nutrition is the most fundamental precondition for achieving other functionings for human beings. Evidence across various countries has shown that levels of and increases in income enhance material well-being, such as improved food security through access to market food supply (Gartaula et al., 2016). These elements are also associated with subjective well-being achievements (McGillivray, 2007). We include livestock production as one of the main well-being outcomes, as it is a key element of livelihood resilience (Millar & Photakoun, 2008; Nanhthavong, 2017). Sale of livestock is among the most common mechanisms for coping with stresses in rural Lao PDR (LSB, 2018).

We assess three aspects of well-being resources including human, natural, and physical, which have been the centre of the global debate on the implications of land acquisitions (Deininger & Byerlee, 2011; Hall et al., 2015; von Braun & Meinzen-Dick, 2009). Among natural resources, we examine access to farmland, non-timber forest products (NTFPs), wild animals, timber and firewood, and water for agriculture. Analysis of human aspects focuses on potential skills and technology transfers by land acquisitions, while analysis of physical aspects focuses on improvement of road access by land acquisitions. Well-being resources related to financial and cultural assets are not considered due to data limitations.

3.2. Analytical framework of effects of land acquisitions on human well-being

This study analyses pathways to human well-being. We define a pathway to well-being as a process shaped by a configuration of explanatory factors that leads to well-being outcomes (see Fig. 1). The explanatory factors include (1) characteristics of land acquisitions; (2) land acquisition implementation processes; (3) change in access to well-being resources caused by land acquisitions; (4) environmental impacts of land acquisitions; and/or (5) socio-ecological contexts of affected

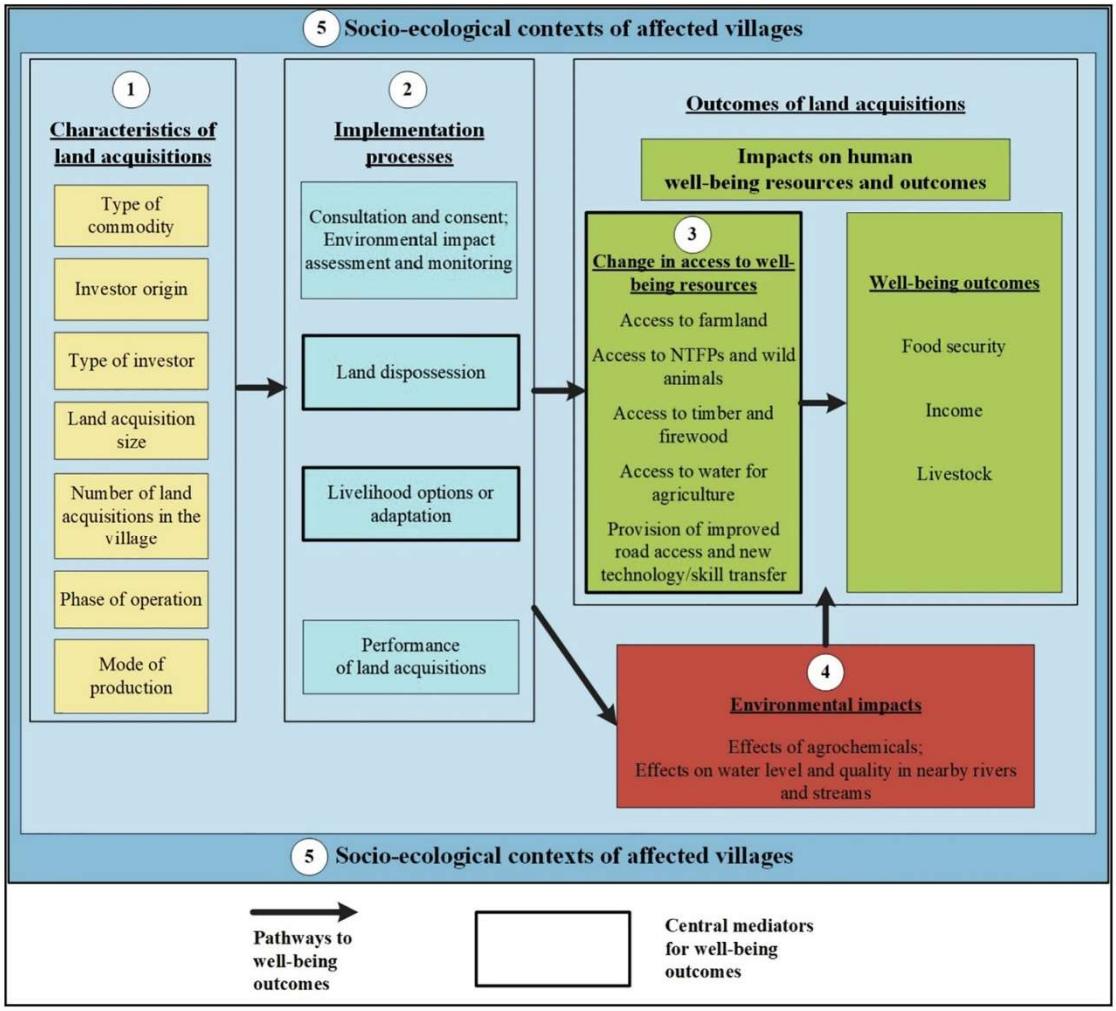


Fig. 1. Analytical framework showing impacts of land acquisitions on human well-being through five explanatory factors.

villages. For example, adverse well-being may occur from the decrease of access to well-being resources. This occurred when a significant amount of farmland and natural resources was expropriated and granted to large-scale or multiple land deals in one village, but villagers were unable to access new land due to the high population density in the village. Alternatively, certain types of land deals may result in significant environmental effects due to requirements of higher agrochemical inputs without adequate environmental impact assessment or monitoring.

We consider explanatory factors one to four mentioned above as direct influential factors of well-being outcomes. However, the fifth factor, socio-ecological contexts of affected villages, shapes the other four explanatory factors and influences well-being outcomes in more profound ways. Hence, we consider it as an indirect influential factor in our analytical framework. For instance, more remote areas may be less attractive to small and/or domestic investors due to higher transportation costs (Hett et al., 2020; Nanhthavong et al., 2020), or in a village where the land title exists, villagers may be able to prevent land dispossession (FAO, 2012a, 2012b). Socio-ecological contexts also affect access to well-being resources. Villagers in more remote areas with low population density and available forest area may be able to claim new land to compensate for the losses (Nanhthavong et al., 2020).

Further, land acquisitions tend to create negative impacts on the local environment including the loss of forest, flora and fauna, water and air quality (Davis et al., 2015; Hett et al., 2020; Zaehringer et al., 2018). For instance, land acquisitions may compete for water from local users thus resulting in more prevalent negative water effects in the surrounding areas (Busscher et al., 2019; D'Odorico et al., 2017). Here, we consider changes in access to well-being resources and environmental impacts both as important impacts of land acquisitions in their own right and as influencing factors for well-being outcomes.

Fig. 1 visualizes the analytical framework and details the explanatory factors. Table 1 provides the theoretical justification for these explanatory factors, and Appendix A details the measurement scales used for the explanatory factors.

Based on previous research, we consider land dispossession, changing access to well-being resources, and livelihood adaptations as the primary mediators that shape the well-being outcomes in the villages affected by land acquisitions (Fig. 1) (Hall et al., 2015; Hufe & Heuermann, 2017; Oberlack et al., 2016; Zoomers & Otsuki, 2017).

4. Materials and methods

4.1. Methodology: archetype approach in global change and sustainability research

This paper applies the archetype approach (Eisenack, 2012) to identify recurrent effects of land acquisitions on human well-being. Within global change and sustainability research, the archetype approach is used to identify how recurrent configurations of factors and processes shape sustainable development outcomes across cases and contexts (Eisenack et al., 2019; Oberlack et al., 2016; Sietz et al., 2019). Archetypes can be identified as case typologies or as building blocks (Oberlack et al., 2019). As case typologies, archetypes organize cases into types. As building blocks, archetypes generalize evidence from cases into recurrent patterns in such a way that: (i) an archetype depicts specific recurrent effects that occur within cases; and (ii) a single case can be characterized by multiple archetypes (Eisenack et al., 2019). This paper utilises both forms of archetype analysis. First, comparative analysis of cases identifies pathways explaining effects of land acquisitions on well-being outcomes. Cases were considered units of observation in exploratory comparison of quantitative survey data, and classified according to outcomes. Recurrent factors associated with the outcomes were investigated. Eighteen case-level pathways to well-being outcomes were identified. Following this, qualitative survey data added further insights by identifying and synthesizing archetypical processes as building blocks that explain connections between explanatory factors and outcomes across the pathways.

4.2. Data

Data are provided by the Quality of Investment Assessment (QI), a nation-wide Inventory on Land Concessions and Leases (LCI) in Lao PDR compiled in 2017 (Hett et al., 2018, 2020). These data cover all explanatory factors in Table 1, as well as changes in income, food security, and livestock. Appendix A details the variables, measurements, and sources. The data utilised is a complete set, consisting of 176 land acquisitions in 294 villages - hereafter referred to as "affected villages" in nine provinces. The data set includes all land deals in start-up and operational phases in these provinces, but omits deals that either did not start or ceased their operations. These deals were assessed for various quality aspects. Data collection was conducted over two consecutive campaigns. First, quantitative variables related to characteristics and spatial components of the land acquisitions were assessed. Next, qualitative data regarding implementation processes, impacts, and legal compliance were collected through group interviews. These interviews were conducted with households who did and did not lose land and had members who were and were not employed as a wage-labourer within land deals, as well as with company representatives and government authorities at the district level. Households were selected and interviews organized by village chiefs (Hett et al., 2018, 2020).

Approximately half of the 294 villages were affected by only one deal (n = 149), while the remaining were affected by multiple deals (see Table B-1 in the Appendix). Land deals affected between one and 68 villages. In cases where a land acquisition affected multiple villages, approximately 30% of those villages were assessed (Hett et al., 2018).

A total of 246,981 ha across nine provinces were granted for the 176 deals, of which 170,000 ha were developed (see Table B-2 in the Appendix). In terms of granted area, the deals primarily invested in rubber, eucalyptus or acacia, sugarcane, and large livestock. The majority of investments originated from economically developing neighbour countries (see Table B-3 in the Appendix), followed by joint ventures between investors in Lao PDR and developed countries. The assessed deals were smaller than global average, with 55% of the deals covering an area less than 200 ha (Nolte et al., 2016). Only one-fifth (n = 36) of the deals were granted area greater than 1000 ha.

Approximately two-thirds (n = 108) of the deals were in the operational phase at the time of assessment, accounting for 113,401 ha of developed area, while the remaining (n = 68; 55,317 ha) were still in the development phase. The deals were initiated between 1999 and 2017, with the majority beginning between 2004 and 2013 (68%; n = 199).

4.3. Data analysis

Data analysis followed six steps:

Step 1. Analysis of well-being resources and outcomes: We categorized well-being outcomes and change of access to well-being resources in affected villages using descriptive statistics. This step provided the direction of changes (increased, unchanged, or decreased) in the three indicators of well-being outcomes, including food security status, income, and livestock production, and the six indicators of well-being resources, including access to farmland, NTFPs and wild animals,

Table 1
Explanatory factors in pathways to well-being outcomes of land acquisitions.

Explanatory factors	Theoretical justification
Characteristics of land acquisitions	
Type of commodity	Different commodities require different levels of inputs including water, agrochemicals (Borras et al., 2011; Chiarelli et al., 2018; Johansson et al., 2016) and labour (Deininger & Byerlee, 2011; Hallam, 2009). Land acquisitions with inputs of higher environmental impacts or lower labour intensity are expected to lead to worse well-being outcomes (Kleemann & Thiele, 2015; Nolte & Ostermeier, 2017).
Land acquisition size	Larger-scale acquisitions consume more land and natural resources and may require higher inputs (e.g. agrochemicals). Although they may offer greater employment, they may also lead to greater land dispossession and environmental impacts (Andersson et al., 2016; Davis et al., 2014). The size of land acquisitions relates to villages in two ways: first, the number of villages affected by land acquisitions per deal and second, the number of deals per affected village.
Investor origin	Domestic investors may have a higher interest in developing their home countries than foreign investors (Oya, 2013). For instance, foreign investors often bring workers from their countries to develop land deals instead of hiring local labour (e.g. Baird et al., 2018), which may limit employment opportunities for affected villagers. Domestic investors are more likely to engage with affected villagers in land acquisition processes compared to the foreign ones (Hett et al., 2020). In this regard, foreign investments may lead to greater land and resource displacement. On the other hand, investors from economically developed countries may have a higher level of compliance with their home countries' regulations regarding responsible investment that may influence the land deal implementation processes, including impacts of agrochemicals on the local environment (Santangelo, 2018).
Type of investor	The typology of investors includes public, private, state-enterprise, and family businesses. They may affect well-being outcomes as their different levels of access to credit and accountability may influence implementation processes (Allee et al., 2015; Baird, 2020; Mulgan, 2000).
Phase of operation	Land acquisitions may generate new livelihood options through employment, which become visible once the land acquisition has reached its operational phase (Baird, 2011; Deininger & Byerlee, 2011). In some cases, employment effects are transient, as less labour-intensive operations in the operational phase replace more labour-intensive activities during the set-up phase (Nolte et al., 2016; Oberlack et al., 2016).
Mode of production	Land deals that establish outgrower schemes next to their land lease or concession may be more likely to result in better well-being outcomes in contrast to concession models. Under outgrower schemes, villagers may be able to keep their land-use rights as well as earn from partnership production (Cotula & Leonard, 2010; De Schutter, 2011).
Implementation processes	
Consultation and consent	Although participatory or inclusive development processes of land acquisitions rarely take place and villagers are often not free to influence decision-making (e.g., resist the land deals) in many countries due to political contexts (Baird, 2015; Borras & Franco, 2010; Colchester et al., 2013; Vermeulen & Cotula, 2010), how land acquisitions engage with affected communities and whether this is through a voluntary or coercive basis, is important for well-being (McCarthy, 2010). Space for genuine consultation and ensuring free, prior, and informed consent (FPIC) of all affected land users has the potential to mitigate negative impacts of land acquisitions (De Schutter, 2011; Titche, 2017).
Environmental impact assessment (EIA) and monitoring	A proper EIA and monitoring may enable investors and government to identify appropriate mitigation measures to minimize adverse impacts (Hett et al., 2020; Titche, 2017; von Braun & Meinzen-Dick, 2009).
Land dispossession	Land dispossession is a fundamental impact of land acquisitions (Hall et al., 2015). A significant loss of access to farmland may push villagers to give-up or reduce agricultural production, affecting their well-being through impacts on food security and income (Porsani et al., 2019; Yengoh & Armah, 2015).
Livelihood options or adaptation	Well-being outcomes depend on livelihood options that are available in the region after the land acquisition. This includes factors such as whether or not losses were adequately compensated (De Schutter, 2011; Franco, 2014), the ability of affected households to access new farmland, and their ability to engage in other development opportunities, such as off-farm or non-farm employment within and outside land acquisitions (Oberlack et al., 2016; Porsani et al., 2019; Yengoh & Armah, 2015). Well-being is adversely affected if better alternative livelihoods are not available (Busscher et al., 2019; Li, 2011).
Performance of land acquisitions	Poor performance of land acquisitions may create adverse well-being outcomes. In this case, affected households may have lost the control over land and associated resources without seeing substantive economic development materializing (Chilombo et al., 2019; Cotula et al., 2014). Moreover, poor performance of land acquisitions can be costly rather than beneficial for both investors and governments (Baird, 2020).
Well-being resources	
Access to farmland, NTFPs, wild animals, timber and firewood, and water for agriculture	Land and forests remain the main sources of food, income, and livelihood resilience for rural populations in many developing countries. This is especially the case in Lao PDR (Van Der Meer Simo et al., 2019). Losing access to these well-being resources thus has direct implications for well-being outcomes in affected villages.
Physical resources: Road access Human resources: technology or skills transfer	Positive spillovers such as infrastructure improvement, new access to farming techniques, skills, inputs, and markets for agriculture may improve the well-being in the rural areas (Deininger & Byerlee, 2011; von Braun & Meinzen-Dick, 2009).
Environmental impacts	
Impacts of agrochemicals and changes in water level and quality in nearby rivers and streams	Environmental contamination such as from agrochemicals is one of the main impacts of land acquisitions that has a direct impact on well-being (Busscher et al., 2019; Friis & Nielsen, 2016; Rulli et al., 2018). In addition, many land acquisitions have effects on surrounding bodies of water through usage for irrigation or pollution from land clearance or chemical use (D'Odorico et al., 2017; Johansson et al., 2016).
Socio-ecological contexts	
Accessibility	In Lao PDR, accessibility is a primary determinant of well-being outcomes. The availability of well-being resources and accessibility to markets and services vary widely across geographical regions (Coulombe et al., 2016; Epprecht et al., 2008).
Previous land use	The previous use of land granted for acquisitions may influence the well-being outcomes. For example, granting land previously used for food production by villagers may have greater negative impacts on well-being than granting truly unused land (Edelman, 2013; Oberlack et al., 2016).
Land tenure security	Because land acquisitions most likely target the areas without official land tenure (Cotula, 2014; Diergarten, 2019; Nolte et al., 2016), strong land tenure security could play an important factor in preventing land dispossession.

timber and firewood, water for agricultural production, technology or skills transfer, and road access improvement. The direction of change was based on villagers' perceptions. Villagers were asked during interview whether a respective indicator relating to well-being outcomes and well-being resources increased, unchanged, or decreased compared to the time before the establishment of a land acquisition in the village.

Step 2. Well-being resources and outcome patterns: Using the criteria of Table 2, we then classified the well-being outcomes of all 294 villages into four patterns according to the direction of change in well-being. Pattern 1 covers cases of enhanced well-being, pattern 2 describes cases without changes in well-being, pattern 3 comprises villages that experienced adverse changes in well-being, and pattern 4 entails cases of trade-offs between indicators. Changes in well-being resources were classified into the same patterns.

Step 3. Identifying pathways to well-being outcomes: We identified the archetypical pathways to well-being outcomes using Formal Concept Analysis (FCA). FCA is a set-theoretic methodology for comparative analysis of cases, and a method for qualitative knowledge representation and inference (Ganter & Wille, 2012). According to Oberlack et al. (2016, p. 157), the "input is a table of models (called objects) and their binary attributes (presence/absence of factors, process, and outcome in the model). FCA generates a concept lattice and compiles logical implications between attributes. The concept lattice organises the attributes in a hierarchical structure such that higher-tier attributes are logical implications of lower-tier attributes, while lower-tier items show distinct combinations with higher-tier attributes in the dataset." While Qualitative Comparative Analysis (QCA) is most appropriate for identifying necessary and sufficient causes of an outcome (Schneider & Wagemann, 2012), FCA is particularly suited to identifying recurrent patterns in the factors associated with an outcome (Ganter & Wille, 2012; Oberlack et al., 2016; Oberlack & Eisenack, 2018). The latter is the purpose of this study.

For each of the four outcome patterns O_x (with $x = 1 \ldots 4$) from step 2, we identified consistent and recurrent factors associated with each outcome O_x through FCA on the recognition of land dispossession, access to resources, and livelihood adaptations as central mediators for well-being outcomes (as discussed in Section 3.2). We first partitioned the cases with O_x based on the degree of land dispossession, given the significance of land access for well-being. Next, we identified distinctive sub-patterns by partitioning cases according to the change in access to well-being resources and livelihood options or adaptation. Finally, we note the frequency and consistency of all factors and processes associated with O_x, including characteristics of land acquisitions, implementation processes, access to well-being resources, environmental impacts, and socio-ecological contexts. We applied a threshold of at least 10% frequency and 50% consistency for factors associated with O_x, meaning that if explanatory factor A holds in 10 out of 20 cases of O_x, and explanatory factor B holds in 8 of the 10, then the relative frequency of A is 50% and the consistency with explanatory factor B is 80%. This step revealed 18 archetypical pathways to well-being outcomes.

Step 4. Comparing pathways to reveal contrasting factors: Next, we compared pathways to identify the factors that create differences between the 18 pathways. We noted differing factors that led to the same outcome. Then, we compared pathways with the same single factor but different outcomes to identify co-occurring factors that could explain how similar factors can lead to different outcomes.

Step 5. Verification: We verified the FCA results by triangulating them with the qualitative responses of our survey in the affected villages. We utilized responses to the following questions: Why did overall food security improve or decrease since the land acquisition was established in the village? How has rice production changed? How did food from nature change? How has money for food changed? Why did income increase or decrease compared to the time before the establishment of a land acquisition in the village? Why did the amount of livestock change compared to before the establishment of a land acquisition in the village? This verification confirmed the FCA results, and added qualitative understanding to the identified effects.

Step 6. Synthesis: To synthesize archetypical processes that explain how and why well-being evolves differently across villages, we first mapped the contrasting factors (from step 4) into an influence diagram. We then conducted a thematic analysis of the qualitative data (from step 5) to identify archetypical processes that lead to a particular well-being outcome, identifying the contrasting factors that influence each process. Finally, we weighted the degree of these influences based on their frequency and consistency. The degree of influence is illustrated by the thickness of the arrows in the influence diagram.

4.4. Limitations

Results of this study should be interpreted in view of the following limitations. First, our precise results are shaped by the partitioning in step 3, which was based on the current state of knowledge demonstrating the significance of access to land in villages affected by land acquisitions (Hall et al., 2015; Oberlack et al., 2016), well-being

Table 2
Classification matrix of well-being patterns.

A). Well-being outcome patterns

Well-being outcome patterns	Change in well-being outcome dimensions		
	Food security	Household income	Livestock
1. Enhanced well-being	Increased or same	At least one aspect increased and no decreased	
2. Unchanged well-being	Same	Same	Same
3. Adverse well-being	Decreased or same	At least one aspect decreased and no increased	
4. Trade-off between well- being outcome dimensions	Increase	At least one aspect decreased	
	Decreased	At least one aspect increased	

B). Well-being resource patterns

	Change of access to well-being resources					
Well-being resource patterns	Access to farmland	Access to NTFPs and wild animals	Access to timber and firewood	Access to water for agriculture	New technology or skill transfer	Provision of road improvement
1. Improved	At least one aspect increased and no decreased				At least one type of technology or skills transferred to villagers or improved road access was provided	
2. Unchanged	Same	Same	Same	Same	None	No
3. Adverse	At least one aspect decreased and no increased				None	No
4. Trade-off between well-being resources	At least one aspect increased and decreased or new technology and skill transferred to villagers or improved road access was provided					

resources, and options for livelihood adaptations. Partitioning the factors differently, e.g. starting with origin of investor, could change the precise number and narratives of the pathways, but the overall insights would remain the same. Second, we measured changes in well-being using three indicators for well-being outcomes and six indicators for well-being resources. Our data do not allow us to draw conclusions about changes in subjective well-being, and the village scale implies that our data does not cover intra-village variation (Llopis et al., 2020). These are important areas for future research. Thirdly, rural livelihoods in developing countries, including Lao PDR, are complex and are influenced by various factors. While this study focuses on significance of land acquisitions to well-being, we do not argue that it represents a complete picture of concurrent drivers of livelihood change. Other important drivers include improvement and expansion of infrastructure, increasing non-farm employment in the nearby towns, and climate change.

5. Results

5.1. Human well-being outcomes and access to resources in villages affected by land acquisitions

5.1.1. Well-being outcomes

Fig. 2-A presents the changes in food security, income, and livestock in affected villages since the establishment of land acquisitions. Food security in 124 (42%) villages decreased, remained unchanged in 119 (40%) villages, and increased in only 51 (17%) villages. Income decreased in 51 villages, remained unchanged in 74 villages, and increased in nearly two-thirds of villages (n = 169). Livestock production decreased in nearly two-thirds of villages (n = 168), remained unchanged in 58 villages, and increased in 68 villages.

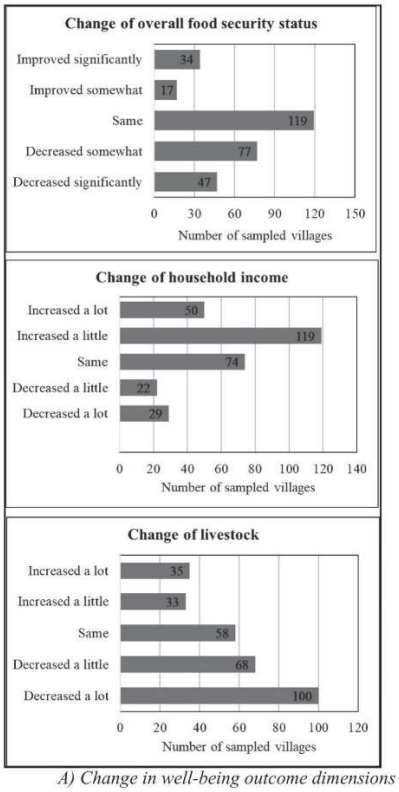
These villages experienced diverse combinations of changes in food security, income, and livestock production (Fig. 2-B). In 16% (n = 47) of affected villages, income increased but villagers still experienced a decrease in food security and livestock. Increases in all three well-being indicators were reported by only 9% (n = 26) of the affected villages. Eleven percent (n = 33) of the villages experienced a decrease in all three indicators. No change in all well-being outcomes was reported in 22 villages.

Taken together, most of the affected villages (37%, n = 110) experienced trade-offs between well-being outcomes, followed by villages with purely adverse impacts on well-being (31%, n = 92). Roughly one-fourth of the villages experienced enhanced well-being in one or more dimensions (n = 70), and another 7% (n = 22) saw no changes in their well-being outcomes.

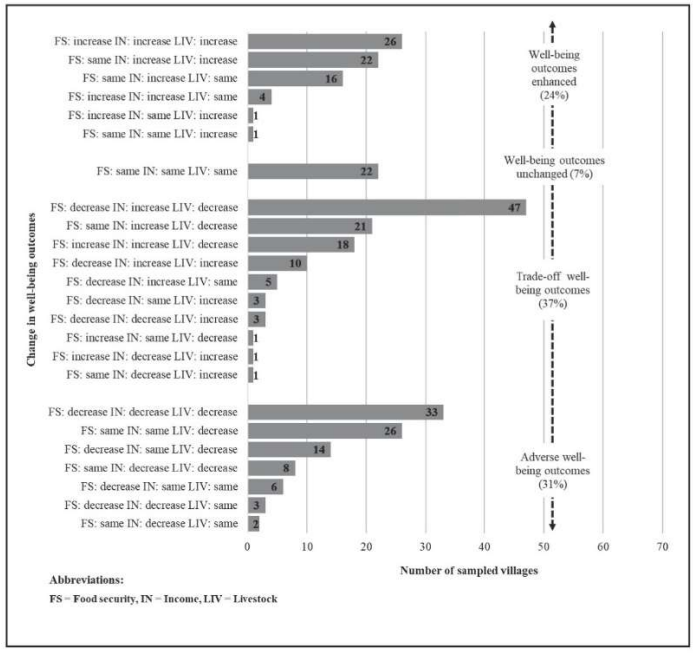
5.1.2. Access to well-being resources

More than two-thirds of the affected villages (n = 193) experienced decreases in access to farmland (Fig. 3-A), with access improving in only 21 villages. Access to NTFPs and wild animals decreased in more than two-thirds of villages (n = 235); around one-fifth (n = 59) reported no change. A decrease in access to timber and firewood was also mentioned by approximately two-thirds of the affected villages (n = 231). Access to water for agriculture decreased for more than half of the affected villages (n = 154), whereas 134 villages saw no change.

Investors did not commit to improving road access in the majority of affected villages (n = 226). However, in the cases where road access improvements were pledged (n = 68), only 38% of villages (n = 26)



A) Change in well-being outcome dimensions



B) Concurrent changes of well-being outcome dimensions

Fig. 2. Changes of well-being outcomes in affected villages since the establishment of land acquisitions.

reported improvements at the time of the assessment. Most villages (n = 246, 84%) reported that no new technology or skills were transferred along with the land acquisitions. Only 19 villages reported that new technology and/or farming techniques were introduced.

In terms of concurrent changes in the six well-being resources, around one-third of the affected villages (n = 96) experienced the decrease of access to farmland, NTFPs and wild animals, timber and firewood, and water for agriculture without improvements in road access, new technology, or skills (Fig. 3-B). Another 15% (n = 43) of affected villages reported that although water access was unchanged, other resources decreased and road access improvements and new technologies or skills were not provided. Only 11% (n = 32) of the affected villages claimed that there was no change in access to well-being resources.

Taken together, the majority of affected villages (68%, n = 202) experienced losses in one or more aspects of well-being resources, and another one-fifth (n = 59) faced trade-offs. Only a small number of villages (11%, n = 33) report no changes, while no village experienced a consistent improvement in well-being resources.

5.2. Archetypical pathways to well-being outcomes

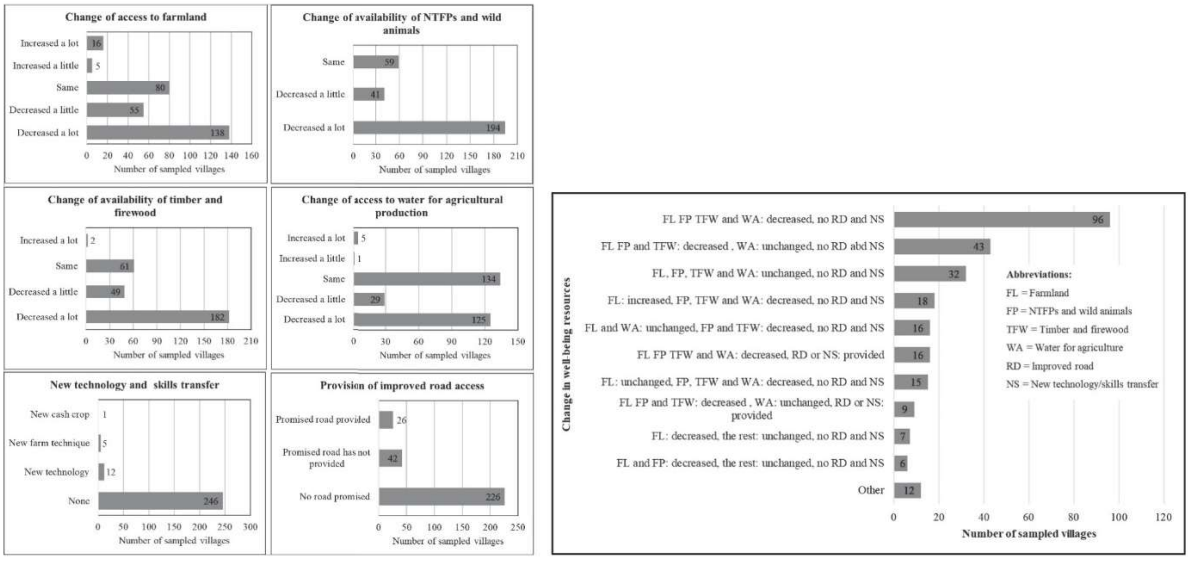
We found 18 distinctive pathways to well-being outcomes, i.e. sets of factors that are associated with particular well-being outcomes. Three pathways improved well-being outcomes, occurring in 21% of the sampled villages (n = 61). Two pathways, affecting 5% (n = 15) of villages, left well-being outcomes unchanged. Five pathways led to adverse well-being outcomes, occurring in 28% (n = 83) of villages. Eight pathways involved trade-offs among different dimensions of well-being outcomes, occurring in 33% (n = 98) of villages. Fig. 4 provides a full overview of the pathways. We describe them in turn.

5.2.1. Pathways to enhanced well-being

Three different pathways enhanced well-being (Fig. 4-A, and Table C-1 in Appendix C). The first pathway (n = 19) occurred in villages that experienced the creation of small-scale domestic family livestock concessions. Most of these are still in the development phase at the time of assessment. Due to the presence of formal land titles in many villages, there was no reported land dispossession or natural resources displacement. FPIC was sought during the land granting process. Villagers reported participation in negotiating the land deals. Additionally, negative environmental impacts were absent in this pathway. The qualitative data showed that increases in income were primarily derived from livestock, as villagers gained better access to pasture land.

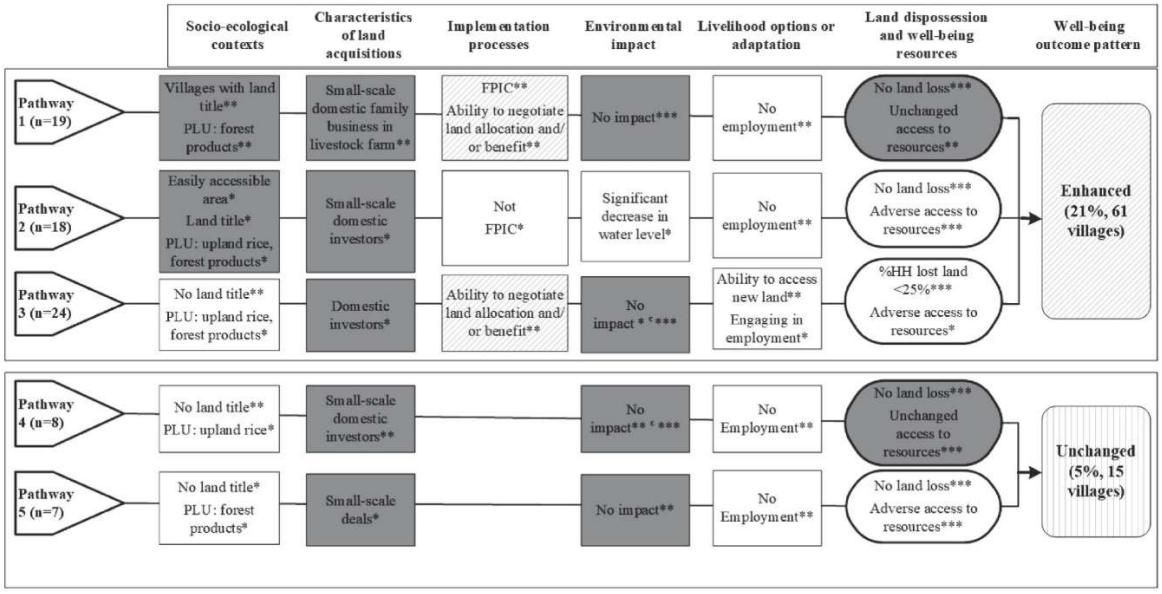
The second pathway (n = 18) is rooted in the existing accessibility of villages that enabled access to development opportunities. This accessibility outweighed the negative impacts of land deals in these villages. Many villages that experience this pathway were located near their respective provincial capitals, benefitting from better market access to pursue commercial crop and livestock production. Although land titles prevented land dispossession, land deals adversely affected access to other well-being resources such as farmland, NTFPs and wild animals, timber and firewood, and water for agriculture without providing improvements in road access and new technology or skills. Since these resources were of limited significance for livelihoods in these particular villages, the positive well-being effects of the proximity to markets outweighed the negative impacts of the land acquisitions. Qualitative data revealed that the losses in well-being resources and water resulted in decreased food provision from nature, but alternative income sources compensated for the losses by providing access to food markets. Furthermore, many villages claimed that the main drivers for increases of food security, income, and livestock production were better market access, employment opportunities outside of the land acquisitions, agricultural production, and commercial livestock production.

All villages that experience the third pathway to enhanced well-being (n = 24) report that they lost land and access to resources to a small degree. Many of them were able to compensate for these losses by gaining access to new farmland elsewhere, engaging in employment, or negotiating for other benefits with investors. Many villagers compensated for the decrease in availability of food from nature through access to food markets. The main reported drivers for improved food security status in this pathway include better market access, better access to new technology enabling villagers to shift to commercial livestock production, and increased income from employment within and outside the land acquisitions.

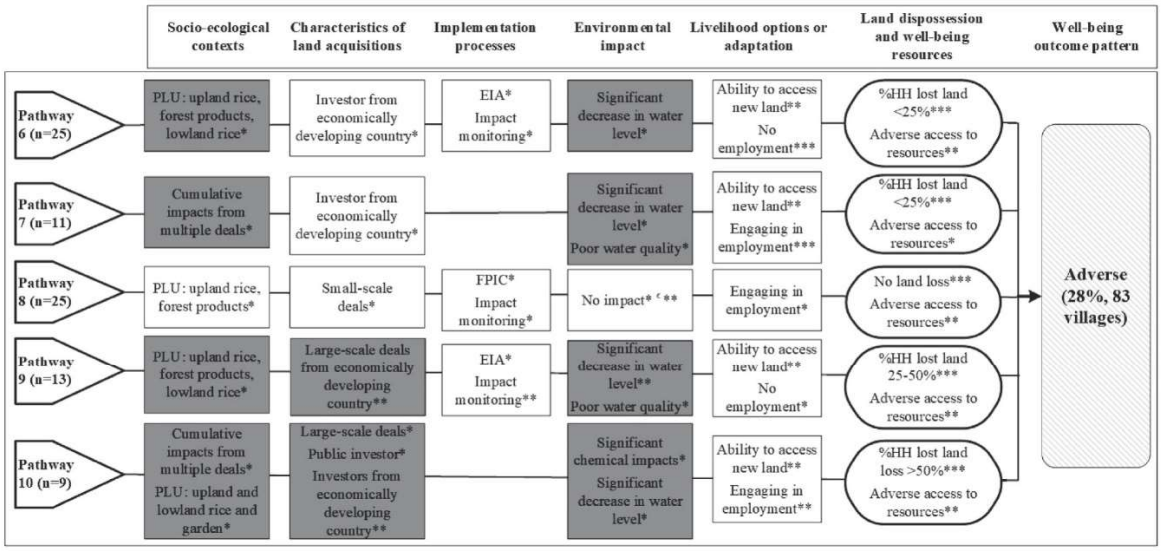


A) Change in well-being resources *B) Concurrent change of well-being resources*

Fig. 3. Changes in access to well-being resources in affected villages since the establishment of land acquisitions.



A) Pathways to enhanced and unchanged well-being outcomes



B) Pathways to adverse well-being outcomes

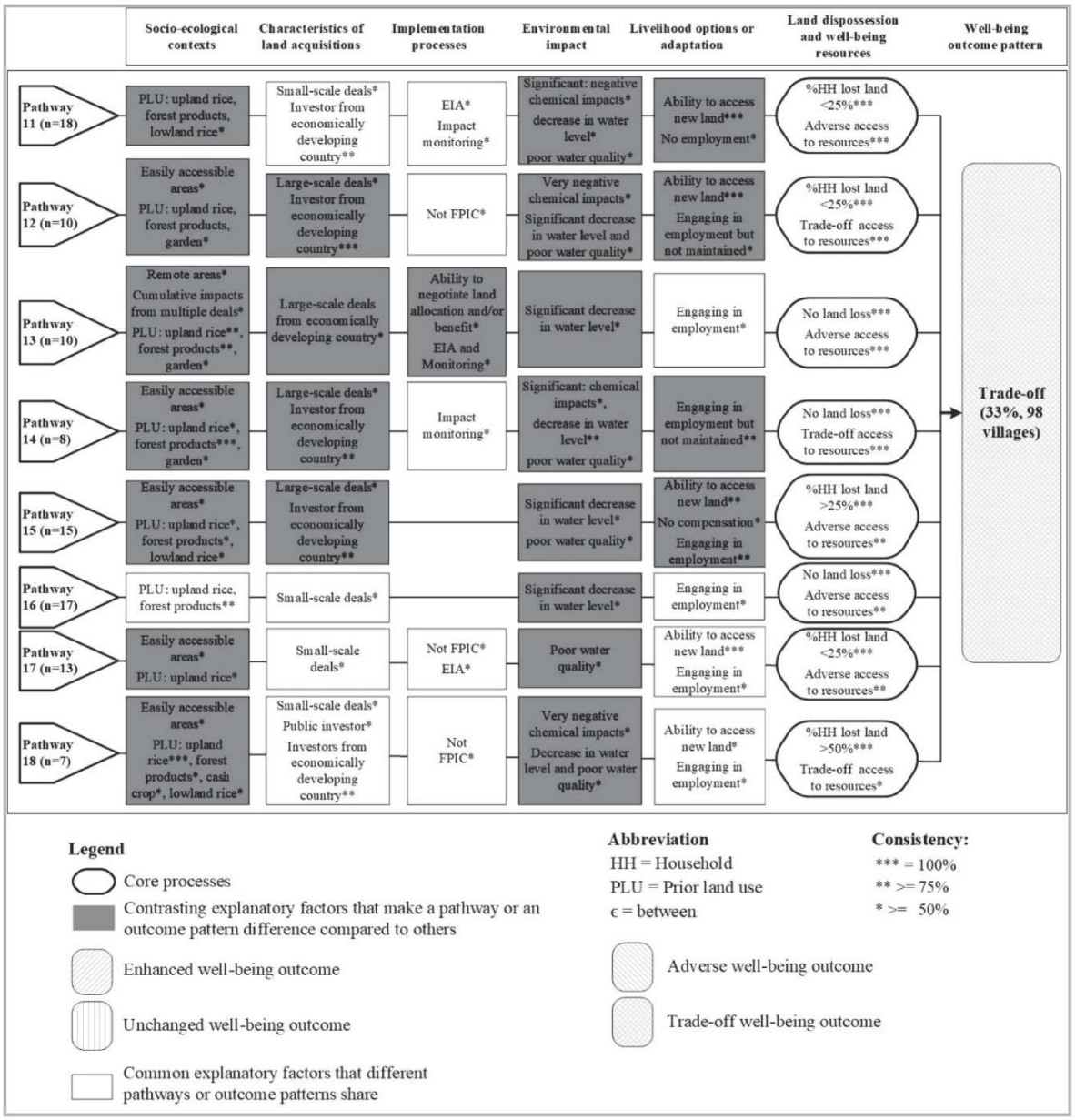
Fig. 4. Pathways to well-being outcomes. *Note: These archetypical pathways represent the pathways to impact in 87% (n = 257) of all villages based on the criteria for consistency and frequency. The remaining thirty-seven cases did not meet the frequency and consistency thresholds to be considered pathways.*

5.2.2. Pathways to unchanged well-being

The two pathways to unchanged well-being share similar factors (Fig. 4-A: pathway 4 (n = 8) and 5 (n = 7) and Table C-1 in Appendix C). Interactions between villagers and investors were minimal. Villagers experienced neither land nor natural resource displacement, nor benefits in employment of spillovers from the land acquisitions. The pathways differ in terms of access to well-being resources. In pathway 5, access to resources was adversely affected and the availability of food from nature decreased, but these effects were of limited importance to livelihoods in these particular villages.

5.2.3. Pathways to adverse well-being

There are five pathways through which land acquisitions generate purely adverse impacts on human well-being (Fig. 4-B and Table C-2 in Appendix C). A commonality between each of these pathways is that all villages experienced adverse impacts on well-being resources. The



C) Pathways to trade-offs between well-being outcome dimensions

Fig. 4. (*continued*).

pathways differ in terms of the extent of land dispossession, livelihood adaptations, environmental impacts, implementation processes, size of land acquisitions, and prior land uses.

Villages that experience pathway 6 (n = 25) saw a small proportion of land dispossession, adverse impacts on well-being resources, and no employment generated for villagers. Although many households were able to access new land, the new land areas were insufficient to compensate for the losses, differing in size, quality, and geographic location. This has a significant impact on villagers' ability to produce food, especially low- and upland rice that is vital to food security. Additionally, decreased water levels in the surrounding rivers and streams negatively affected well-being in these villages.

Similar dynamics were observed in pathway 7 (n = 11). Villagers also lost small proportions of land, and many households were able to access new land. However, >10 land deals affected these villages, accumulating impacts, particularly adverse effects on well-being resources and water in surrounding rivers and streams. New and widespread employment opportunities in these villages were not sufficient to compensate for these adverse well-being impacts.

Pathway 8 (n = 25) differed substantially from the others. These

villages did not experience land dispossession since FPIC was sought. Despite the FPIC procedures and secured land access, well-being outcomes were still negatively impacted in these villages due to reduced access to well-being resources.

Pathway 9 (n = 13) featured acquisitions of particularly large size. A significant share of households lost land, but no local employment was generated by the land acquisitions. Although many households were able to access new land, the new areas were insufficient to compensate for the losses, differing in size, quality, and geographic location. This significantly impeded on villagers' ability to produce food, especially low- and upland rice. These villages also experienced significant decreases in water levels and quality in nearby rivers and streams caused by the land deals.

Finally, pathway 10 (n = 9) describes trajectories in villages that experience cumulative impacts of multiple deals and who are affected by deals of particularly large size. These factors resulted in widespread land dispossession and negative effects from agrochemical and water impacts in surrounding rivers and streams. Villages lost access to land for important uses, such as low- and upland rice fields as well as gardens that villagers used for food and income production, while only limited employment opportunities were made available to villagers.

The qualitative data from these villages revealed that the decrease in food security was driven by decreases in both rice production and food from nature, triggered by farmland and resource enclosures, chemical contamination, population increases, and climate change. Income decreased in these villages due to the loss of income opportunities from forest products or agricultural commodities. Livestock production also decreased due to pasture land displacement, disease, and chemical contamination.

5.2.4. Pathways to trade-offs between food security, income, and livestock

Trade-offs between impacts on food security, income, and livestock was the most frequent outcome pattern. There are eight pathways leading to trade-offs (Fig. 4-C and Table C-3 in Appendix C). Villages across these pathways lost access to land, well-being resources, or both.

The eight trade-off pathways differ in terms of the proportion of affected households. All pathways experienced adverse environmental impacts to varying degrees. The eight pathways experienced different combinations of gaining access to new land and employment. Further noticeable differences between pathways are observed in the qualitative data.

First, pathways 11–15 occur in villages that experienced increased income but decreased food security and livestock production (n = 61). The main drivers reported for the decrease of food security were the dispossession of farmland and resources that villagers relied on for food, chemical contamination, deforestation, and climate change. Livestock production decreases were due to pasture enclosure, chemical contamination, and disease. By contrast, employment opportunities outside and within land acquisitions, commercial agricultural production, and livestock production and trade were key factors for the increase in income. However, the increased income from non-traditional sources (e.g. outside smallholder agricultural production and collecting forest products) was unable to improve food security.

Second, food security and income increased but livestock production decreased in pathways 16–18 (n = 37). In these settings, villagers reported that their food security improved through better access to the food market and agricultural expansion. Income increases were due to salaries in public administration, hired labour outside and within land acquisitions, broader availability of development opportunities, and agricultural production. Disease, pasture enclosure, and chemical contamination were the main drivers for the decrease of livestock production.

6. Discussion

6.1. Archetypical processes shaping human well-being in land acquisition contexts

Based on our chosen thresholds for a consistent and recurrent factor as explained in step 3 in Section 4.3, land acquisitions affect well-being outcomes through 18 distinct pathways. Different partitioning factors may not only change the precise number of pathways but also lead to other possible pathways as explained in Section 4.4. This result is based on an archetype analysis that generates a typology of cases (here: villages), since each village experiences exactly one pathway. These pathways demonstrate configurations of factors and outcomes that are recurrent and consistent across villages. They do not yet, however, systematically explain the processes through which the factors affect well-being. As noted, archetype analysis offers an approach to identify such processes by decomposing cases into building blocks. This approach, "decomposes each case into distinct components such as processes or causal mechanisms, which may operate simultaneously and together explain the dynamics or outcomes observed in that case" (Oberlack et al., 2019, p. 4).

Based on the comparison of the 18 pathways and the qualitative insights in step 6 of our methodological procedure, we identify five building blocks, i.e. archetypical processes, that explain how and why human well-being evolves better in some affected villages than in others. These processes are: (i) shifting access to land and natural resources; (ii) commercialization of agriculture; (iii) availability of development opportunities in the region; (iv) environmental impacts; and (v) employment opportunities within and beyond land acquisitions.

Fig. 5 illustrates the factors associated with each process. Further, the influence of these processes on well-being is contingent on the resource-dependency and portfolio of livelihood options in the affected villages. If livelihoods depend largely on land and natural resources, villages are more likely to suffer more from displacements caused by land acquisitions than villages whose livelihoods are more engaged in non-farm activities. Simultaneously, these processes also directly shape livelihood portfolios in the affected village.

6.1.1. Shifting access to land and natural resources

Our results clearly indicate that land acquisitions that displace villagers from land, almost always lead to adverse impacts on well-being. Well-being may be maintained or possibly enhanced in villages where there is no land or natural resource displacement, the value of the displacement is insignificant to villagers' prior livelihoods, or the villagers are able to continue agricultural or livestock production for subsistence or market purposes on suitable land. These effects are found in pathways 1–5. In rural areas, villagers may not be in the same status and position to access resources, and development opportunities (Rigg, 2006, 2016). Therefore, further in-depth study is needed to investigate whether land acquisitions create winners and losers within villages (Busscher et al., 2019; Gironde et al., 2014; Kuusaana, 2017; Porsani et al., 2017). The results also show that while some villagers gain access to new land, this land is often not adequate to compensate for losses in terms of quality, size, or geographical location. This may especially be the case if the new land was previously "unused or underused", which are not suitable for farming, remote, or require higher inputs (Mccarthy et al., 2012; Oxfam, 2011).

The process of enhanced well-being is influenced by three factors. First, this depends on the land tenure security in the affected villages. Pathways 1 and 2 demonstrate that land titles have enabled villagers to negotiate deals to protect their claims, resulting in no land dispossession and less significant natural resource displacement. However, land acquisitions in Lao PDR often occur in areas without land titling (Dwyer, 2017; Hirsch, 2011). Second, the degree of land and natural resource displacement is not only related to the size of deals as suggested by previous studies (Andersson et al., 2016; Davis et al., 2014) but also to

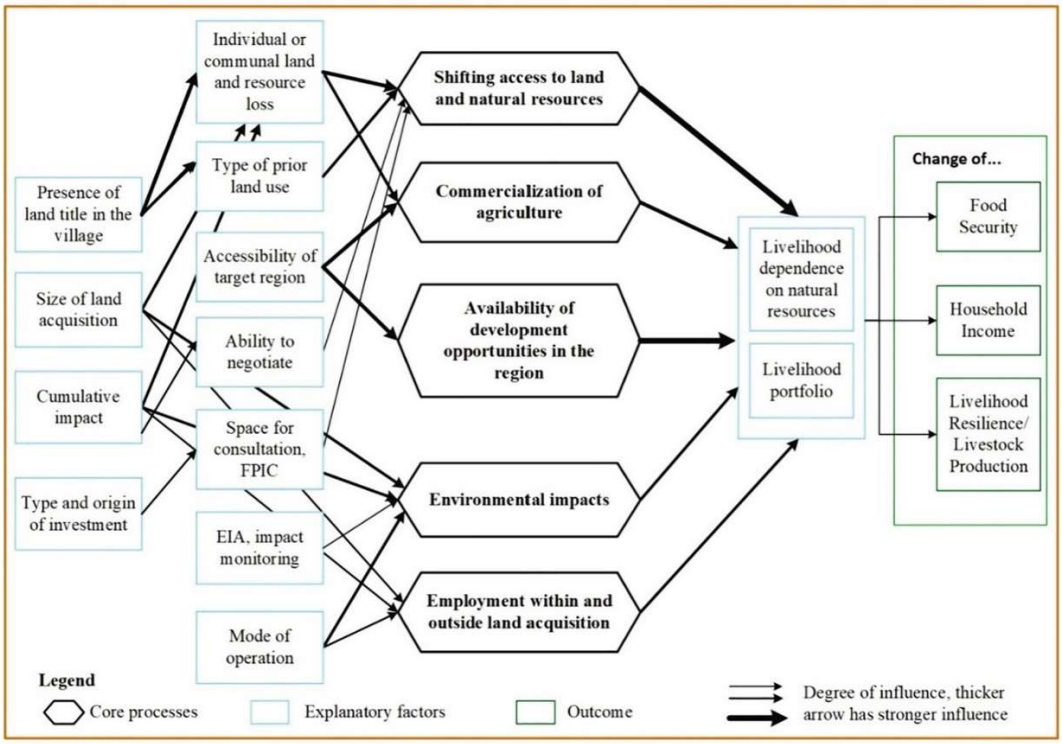


Fig. 5. Influence diagram of archetypical processes shaping human well-being outcomes in villages affected by land acquisitions.

the cumulative impacts of multiple deals within a village. This accumulation can amplify adverse well-being effects, as seen in pathways 7, 10, and 13. Third, our findings indicate that FPIC does not guarantee enhanced well-being outcomes as claimed by some international organizations (FAO, 2012a; von Braun & Meinzen-Dick, 2009), supporting the argument that outcomes of land acquisitions are not only shaped by whether or not the FPIC has been sought, but rather that they change over time along the business cycle (Franco, 2014; Nanhthavong et al., 2020; Vermeulen & Cotula, 2010). Although the FPIC principle is not widely applied in many countries restricted by the political context (Baird, 2015; Borras & Franco, 2010; Colchester et al., 2013; Vermeulen & Cotula, 2010), we find that providing space for consultation and seeking FPIC plays an essential role in preventing land dispossession and enhancing the ability to negotiate for land allocation or other benefits such as in pathways 1 and 8.

6.1.2. Commercialization of agriculture

Our results suggest that accelerating commercial crop or livestock production is among the most important processes for improved household income in the affected villages. Agricultural commercialization is a simultaneous process of change, independent from land acquisitions in the majority of villages that experienced enhanced well-being. Greater accessibility of the affected region is a key factor enabling such commercialization. Areas with closer proximity to the provincial capital have better access to input and output markets, allowing farmers to pursue commercial crop and/or livestock production. The resulting increase in income enables villagers to improve their food security through the food market supply, such as in pathways 2, 3, and 11–18. Our results further suggest that provision of improved road access and new technology or skills transfer by investors increases the degree of villagers' engagement in commercial agriculture, demonstrated in pathways 12, 14, and 18. This supports previous findings of these provisions' role in agrarian transitions (e.g. Ahmed et al., 2019; Porsani et al., 2017; Widianingsih et al., 2019). While proponents have expected land acquisitions to foster such infrastructure development (Deininger & Byerlee, 2011; von Braun & Meinzen-Dick, 2009), we found that investors provided improved road access in only a small number of villages (n = 26, 9%). Further, our results indicate that commercialized agriculture was less likely to be taken up by villagers in cases that resulted in land dispossession, new land was not provided, or the new land was not comparable in the size or quality. In these cases, the land acquisitions do not only impact villagers adversely, but investors and government also lose, which supports Li's statement that, "[t]ransnational farmland investments in much of the Global South are risky for all parties involved: agribusiness firms and their financial backers; host-country governments; and the people on the spot" Li (2015, p.560). Baird calls this as "lose-lose-lose" scenarios (2020, p. 404).

6.1.3. Availability of development opportunities in the region

Our results reveal that villagers were able to enhance their well-being in cases located near the provincial capital. This proximity offered access to a wide range of development opportunities for livelihoods, business, and trade, including and beyond the commercialization of agriculture. This archetypical process was observed in pathways 2, 12, 14, 15, 17, and 18. Food provision through markets played an important role in improved food security of these villages. This aligns with the overall development patterns in Lao PDR, in which better living standards are observed in urban, lowland areas (Coulombe et al., 2016; Epprecht et al., 2008).

6.1.4. Environmental impacts

One of the primary drivers of decreased well-being in the sampled villages is environmental pollution from agrochemicals such as fertilizers, pesticides, and herbicides, and their impact on decreased water levels and quality in nearby rivers and streams. Numerous villagers reported that household income decreased due to chemical contamination affecting the availability of food from nature, water for consumption, and pasture for livestock. Environmental impacts are consistently associated with two factors. First, the mode of production applied by the investors determines the level of agrochemical usage and their spillover effects to rivers and streams, as seen in pathways 6, 11, 16, 17, and 18. Second, the size of the deal and the cumulative impacts in cases of multiple deals influence the degree of experienced environmental impacts, in particular in pathways 7, 9, 10, and 12–15. We found that the negative impacts of agrochemicals and water impacts are most likely to occur with large-scale deals or cumulative impacts of multiple deals. This result from Lao PDR aligns with similar findings from Chile (Andersson et al., 2016) and provides evidence for global assessment models (Davis et al., 2014).

It has previously been argued by bodies such as the FAO that EIA prior to and monitoring throughout a land deal has the potential to minimize and mitigate environmental impacts (FAO, 2012a; FAO et al., 2010). On the contrary, our results show that the environmental impacts do not differ between cases with and without EIA. This finding supports arguments that EIA is not effective in ensuring environmental protection, but rather that EIA can be completed simply to satisfy decision-makers. Currently, EIAs appear to have a limited role and impact in the project planning process (Jay et al., 2007), and do not take into account of cumulative impacts across land acquisitions and other development activities such as hydropower development, mineral extraction, etc. (Baird & Barney, 2017).

6.1.5. Employment opportunities within and outside land acquisitions

Our findings suggest that employment generated by land acquisitions can become an important source of cash income for villages. However, these opportunities alone cannot enhance well-being or compensate for land and natural resource dispossession. Employment opportunities outside deals, including off-farm and non-farm jobs, are more consistently associated with improvement of incomes, such as in pathways 2, 3, and 10–18. In general, in cases with adverse well-being outcomes, villagers claimed that there were limited or no employment opportunities within or outside deals. Employment generated by deals is not only affected by the mode of operation and their labour intensity (Deininger & Byerlee, 2011; Kleemann & Thiele, 2015) but also by size of deals or cumulative impacts of multiple deals in the village. Larger and multiple deals in a village tend to be associated with a higher total number of jobs. However, larger and multiple deals are more likely to cause displacement, leaving villagers unable to continue traditional livelihood systems.

6.2. Six policy entry points on human well-being in land acquisition contexts

The majority of assessed land acquisitions affected human well-being adversely or through trade-offs. In a limited number of villages, well-being increased despite the presence of land acquisitions. Illustrated in the influence diagram (Fig. 5), we point to six policy entry points to improve human well-being in villages affected by land acquisitions.

First, these results discourage land acquisitions in contexts of low land tenure security. Only recognized, secured land rights can ensure sufficiently strong bargaining power for those whose well-being is most at stake in land acquisitions. This is a strong call for caution, as large-scale land acquisitions have targeted areas of low tenure security across the Global South (Cotula, 2014; Diergarten, 2019; Ndi, 2019; Nolte et al., 2016). Land tenure in rural areas is often weak and informal (Cotula, 2014; Dwyer, 2017) and formalization of tenure involves its own set of challenges and risks (Dwyer, 2015). Additionally, land granting processes should ensure that there is space for consultation and acquisition of FPIC, so that affected villages can negotiate for land allocation and/or benefits from deals. This requires strong and accountable community leadership (Baird, 2017; Hall et al., 2015).

Second, consistent adverse effects discourage large-scale deals and multiple deals in individual villages. Pathway 1 shows well-being can be enhanced in cases of small-scale deals. However, the enabling factors for this pathway are exceptionally narrow. It is almost impossible to avoid displacement of access to land or well-being resources, as local livelihoods rely on most of the land for one purpose or another (Hilhorst & Zoomers, 2012; Zoomers & Kaag, 2014). Well-being can increase in the early years of small-scale deals in which land and natural resource displacement was not significant and adequately compensated for, and environmental impacts were minimal. Such "absence of dispossession" (Hall et al. 2015) is reflected in pathways 1 and 4. However, small-scale deals can still trigger adverse impacts and is not a sufficient factor for positive impacts (Baumgartner et al., 2015; Friis & Nielsen, 2016). Strong land tenure security remains an essential precondition for enhanced well-being, even in the context of small-scale deals.

Third, the mode of operation is a consistent predictor of well-being impacts, discouraging land acquisitions utilizing agricultural practices with low labour intensities or high environmental impacts.

Fourth, FPIC and EIA are confirmed as important procedures to strengthen the voice of land users, but they must not be misconstrued as a guarantee of positive well-being effects. Further, because adverse impacts are more prevalent in cases affected by multiple deals, cumulative impact assessment should be taken into consideration in land acquisition granting processes.

Fifth, environmental degradation such as chemical contamination from large-scale farming operations and smallholder agricultural production, is one of the main threats to well-being in rural areas. Adverse impacts in the medium- or long-term are likely without environmental safeguards and controls on chemical use.

Sixth, pathways 2–3 demonstrate that better alternative development opportunities can overcome well-being losses associated with land acquisitions, if losses are limited. Villagers are able to improve their income and food security in contexts where the region is easily accessible and livelihoods are not solely dependent on land and natural resources. Improvements come from engagement in commercial

agriculture, employment within and outside land acquisitions, and other opportunities such as trade. These findings are supported by other studies in Lao PDR and in the region (Manivong et al., 2014; Rigg, 2007; Rigg et al., 2016). This finding indicates that policy should focus on sustainable development strategies beyond, rather than within, large-scale land acquisitions. Agricultural production in line with principles of agroecology and solidarity economy (Altieri, 2018; FAO, 2015) might provide one such alternative strategy for sustainable development.

7. Conclusion and recommendations

Using a unique, national-scale comprehensive dataset on characteristics, implementation processes, and impacts of land acquisitions in Lao PDR, this study investigated the effects of land acquisitions on human well-being at village level. In contrast to narratives of "global land grabs" that do not recognize case-specific differences, the results demonstrate that the land acquisitions in our sample influence human well-being through 18 distinctive pathways, ranging from enhanced, unchanged, adverse, and trade-offs in well-being outcomes. Five archetypical processes explain linkages between factors and well-being outcomes. The clear majority of land acquisitions trigger trade-offs or adverse impacts. Enhanced well-being only occurred in a small number of villages, and arises only under specific, narrow preconditions, or through concurrent change processes unrelated to land acquisitions. The archetypical processes reveal six entry points for policy to enhance human well-being in villages affected by land acquisitions in Lao PDR.

Land-based investments are part of national development strategies in many countries worldwide. Since our results are based on data from Lao PDR, we cannot ascertain the empirical validity of our results elsewhere. However, the general observation that land acquisitions affect well-being through multiple pathways to impact will most likely hold elsewhere (cf. e.g. Oberlack et al., 2016; Dell'Angelo et al., 2017b). This calls for nuances to land investment narratives and governance arrangements that are lacking awareness of the factors that explain how and why a land acquisition affects well-being in a particular way. Furthermore, our results in Figs. 4 and 5 point to explanatory factors that are observed in many parts of Asia, Africa, South America, and Europe, nurturing the hypothesis for future research that similar pathways could be at play in different contexts. The results of this study indicate a strong need for caution regarding land acquisitions due to their adverse impacts on well-being.

Our analysis points to promising areas for future research. The results demonstrate that concurrent drivers of change beyond land acquisitions, such as commercialization of agriculture and accessibility, are key in shaping human well-being. Therefore, future studies should expand the focus from land acquisitions towards place-based research approach that considers multiple, concurrent drivers of change in entire regions. Case study research designs would be highly suitable for this aim, in particular if case studies and national-scale analyses are designed in complementary ways. Furthermore, the repetition of the Quality of Investment Assessment (QI) would allow generating longitudinal data to ascertain the well-being impacts of land acquisitions over the long term.

Although previous case studies have pointed to the adverse effects of land acquisitions, it remains unclear if the state of knowledge suffers from case selection and publication bias, as individual researchers might be incentivized to focus on critical land acquisition cases. This study is among the first to provide country-scale evidence on the well-being effects of land acquisitions.

We conclude that land acquisitions as a general approach for rural development in Lao PDR are not effective, as most do not contribute to local well-being. Instead, the majority of 176 land acquisitions in our sample generate adverse and trade-offs in outcomes. Based on this, protecting villagers' land-use rights is imperative. Further, since displacing access to natural resources was a primary cause for reductions in food security, income, and livestock production, communal natural resources must be taken into account. Large-scale land acquisitions should be avoided as their adverse impacts on well-being outweigh the opportunities they present. Employment generated by land acquisitions can become an important cash source, but alone are not sufficient to improve well-being, making it essential to also maintain traditional livelihoods. Further, alternative approaches to agricultural development beyond land acquisitions are needed as focal strategies for sustainable development in rural areas. Strategies building on agroecology and solidarity economy may be a scientifically supported, promising strategy for shaping inclusive development that leaves no one behind in enhancing human well-being and towards achieving sustainable development.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Appendix A. . Variables included in the analysis

Table A: Variables, measurement, and data source

Variable	Measurement	Explanatory factors							Source
		Characteristics of land acquisitions	Implementation processes	Livelihood option/ adaptation	Environmental impacts	Well-being resource	Well-being outcome	Socio-ecological context	
Commodity types	Type of product invested in through the land acquisition	x							LCI – quantitative data
Type of investor	Public, private, state-enterprise, or individual investor	x							Company interviews
Country of origin of the investor	Domestic, economically developed or developing country, or joint-venture between domestic and foreign country	x							LCI – quantitative data
Size of land acquisitions	Number of villages affected by each deal	x							LCI – quantitative data
	Number of deals affecting each village at the time of assessment							x	
Outgrower scheme	Whether a deal established an outgrower scheme in the affected village in addition to the concession scheme, measured as a binary	x							Interview with villager committees and household interviews
Phase of operation	Development or operational	x							LCI – quantitative data
	Age of deals, measured as the difference between the time of assessment conducted and the year that deal started development in the village	x							Interview with villager committees
Degree of consultation	No consultation, consultation with ability to negotiate, and consultation without ability to negotiate		x						Household interviews and interviews with villager committees
Consent	Did not seek consent, consent with FPIC, consent without FPIC, and no consent		x						Household interviews and interviews with villager committees
Environmental impact assessment (EIA)	Initial Environmental Examination (IEE), Environmental Impact Assessment (EIA), and no assessment		x						Company interviews and interviews with the District Office for Natural Resources and Environment (DoNRE)
Environmental monitoring	Monitoring and no monitoring		x						Company interviews and DoNRE interviews
Performance of land acquisitions	Investors' perception on the overall progress of deal development against the overall project schedule, measured as progressing well or not progressing well		x						Company interviews and DoNRE interviews
Land dispossession	The proportion of households per village who experience land dispossession, calculated by dividing the total households who lost land by the total number of households in the village		x						Household interviews and interviews with villager committees
	Average of land dispossessed per household, calculated as total area in hectares divided by the number of households who lost land		x						
Compensation delivery to the affected households	No household with land dispossession, all compensation delivered, partial compensation delivered, no compensation delivered, no compensation promised		x						Household interviews and interviews with villager committees
Ability to access new farmland	Ability of households who experience land dispossession to access new land, measured as access, no access, or no land dispossession			x					Household interviews
Employment	Proportion of working-age village population currently employed by deals			x					Employment data based on household interviewsWorking-age population in the village derived from the 2015 Lao Population and Housing Census (PHC)
	Origin of worker measured as from the affected village, neighboring village, other district or provinces, or country of investor			x					
	Change of employment opportunities over the last five years measured as increased significantly, increased somewhat, same,			x					

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(*continued*)

Variable	Measurement	Explanatory factors							Source
		Characteristics of land acquisitions	Implementation processes	Livelihood option/ adaptation	Environmental impacts	Well-being resource	Well-being outcome	Socio-ecological context	
	decreased somewhat, or decreased significantly								
Impacts of agrochemicals	Villagers' perception of impacts of applying fertilizer, pesticides, and herbicides in deal operation measured as positive, negative, negative, no impact or Not applicable/ company does not use agrochemical				x				Household interviews
Change of level and quality water	Villagers' perception of change in quantity and quality of water in the surrounding rivers/ streams measured as increased a lot, increased a little, same, decreased a little, or decreased a lot				x				Household interviews
Change in access to farmland	Villagers' perception of change in access to farmland in the affected village since the establishment of land acquisition measured as increased a lot, increased a little, same, decreased a little, or decreased a lot					x			Household interviews
Change in access to NTFPs and animals	Villagers' perception of the availability of NTFPs and wild animals in the affected village since the establishment of land acquisition measured as increased a lot, increased a little, same, decreased a little, or decreased a lot					x			Household interviews
Change in access to timber and firewood	Villagers' perception of the availability of timber and firewood in the affected village since the establishment of land acquisition measured as increased a lot, increased a little, same, decreased a little or decreased a lot					x			Household interviews
Change in access to water for agriculture	Villages' perception of access to water for agriculture in the affected village since the establishment of land acquisition increased a lot, increased a little, same, decreased a little or decreased a lot					x			Household interviews
Road access improvement provided by investors	No improved road access was promised, promised road access was provided, or promised road access was not provided					x			Interview with village committees
New technology or skill transfer by investors	New farming technique, new inputs, or nothing					x			Interview with village committees
Change of overall food security	Villagers' perception of the change in overall food security in the affected village since the establishment of a land acquisition measured as improved significantly, improved a little, same, decreased a little or decreased a lot						x		Household interviews
Change of rice production	Villagers' perception of change in rice production in the affected village since the establishment of a land acquisition measured as increased significantly, increased a little, same, decreased a little or decreased a lot						x		Household interviews
Change of food from nature	Villagers' perception of the availability of food from nature in the affected village since the establishment of a land acquisition measured						x		Household interviews

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(*continued*)

Variable	Measurement	Explanatory factors							Source
		Characteristics of land acquisitions	Implementation processes	Livelihood option/ adaptation	Environmental impacts	Well-being resource	Well-being outcome	Socio-ecological context	
	as increased significantly, increased a little, same, decreased a little or decreased a lot								
Change of cash for food	Villagers' perception of change in household cash for food since the establishment of a land acquisition measured as increased significantly, increased a little, same, decreased a little or decreased a lot						x		Household interviews
Change of household income	Villagers' perception of change in household income since the establishment of a land acquisition measured as increased significantly, increased a little, same, decreased a little or decreased a lot						x		Household interviews
Change of livestock	Villagers' perception of change in number of large livestock (i.e. buffalo and cattle) in the affected village since the establishment of a land acquisition measured as increased significantly, increased a little, same, decreased a little or decreased a lot						x		Household interviews
Accessibility	Mean travel time from village to nearest provincial capital							x	2015 PHC
Main village economy	Three most important village economic activities in terms of time and labour allocation							x	Interviews with village committees
Land tenure in the affected village	Presence of land title or no presence of land title							x	Interviews with village committees
Land use prior land acquisition	Land use prior to granting to a land acquisition							x	Households interview

Appendix B. . Overview of sampled land deals and villages

Table B-1: Overview of sampled land deals and villages

	Number of affected villages per deal and number of deals per village			
	Mean	Min	Max	Standard Deviation (*SD*)
Number of affected villages per deal (N = 294)	3.39	1	68	7.27
Number of deals per village (N = 176)	2.04	1	9	1.68

Table B-2: Number of deals and sampled villages by types of commodities and size

Product	Granted area (ha) (% of total)	Developed area (ha) (% of total)	Number of deals (% of total)	Sampled villages
Rubber	122,332 (50%)	79,069 (47%)	62 (35%)	120
Eucalyptus/acacia	66,316 (27%)	46,711 (28%)	14 (8%)	46
Sugar cane	40,757 (17%)	26,315 (16%)	4 (2%)	26
Large-livestock	8,125 (3%)	6,636 (4%)	35 (20%)	40
Agarwood	2,835 (1%)	803 (<1%)	6 (3%)	7
Cassava	1,077 (<1%)	493 (<1%)	6 (3%)	6
Coffee	852 (<1%)	591 (<1%)	7 (4%)	8
Corn/maize	607 (1%)	345 (<1%)	4 (2%)	3
Banana	588 (<1%)	400 (<1%)	5 (2.8%)	4
Other products	3,141 (1%)	6,214 (4%)	33 (19%)	25
Total	**246,631**	**168,717**	**176**	**294**

Source: 2017 LCI, table produced by authors.

Table B-3: Number of deals and sampled villages by origin of investor and size

Origin of investors	Granted area (ha) (% of total)	Developed area (ha) (% of total)	Number of deals (% of total)	Number of affected villages
Domestic	***31,348 (13%)***	***11,018 (6%)***	***86 (49%)***	***82***
Foreign	***187,635 (76%)***	***134,348 (80%)***	***73 (41%)***	***188***
Economically developed countries	3,037 (2%)	3,284 (2%)	6 (8%)	18
Economically developing countries	184,598 (98%)	131,064 (98%)	67 (92%)	170
Lao-joint venture	***27,648 (11%)***	***23,351 (14%)***	***17 (10%)***	***24***
Lao-joint venture with economically developed countries	25,359 (92%)	21,742 (93%)	7 (41%)	17
Lao-joint venture with economically developing countries	2,289 (8%)	1,608 (7%)	10 (59%)	7
Total	**246,631**	**168,717**	**176**	**294**

Source: *2017 LCI, table produced by authors.* ***Note:*** *We classified economically "developed" and "developing" countries based on the UN's categorization* (UN, 2019).

Appendix C. . Detailed archetypical pathways to well-being outcomes of land acquisitions

Table C-1: Pathways to enhanced and unchanged well-being outcomes.

Explanatory factors	Attributes	Enhanced wellbeing outcomes			Unchanged wellbeing outcomes	
		Pathway 1 (n = 19)	Pathway 2 (n = 18)	Pathway 3 (n = 24)	Pathway 4 (n = 8)	Pathway 5 (n = 7)
Land dispossession and change of well-being resources	% of households who lost land	No land dispossession***	No land dispossession***	1-25%***	No land dispossession***	No land dispossession***
	Access to well-being resource pattern	Same**	Adverse***	Adverse*	Same***	Adverse***
	Ability to access new land			HHs were able to access new land**		
	Delivery of compensation					
Livelihood options/ adaptation	% of working age population employed	No employment**	No employment**		No employment**	No employment**
	Origin of workers			Affected village*		
	Change of employment opportunities over the last five years					
Chemical impacts	Fertilizer impact	None***	None**	None**	None***	None**
	Pesticide impact	None***	None**	None***	None***	None**
	Herbicide impact	None***	None***	None*	None**	None**
Water impact	Change of water quantity	Same***	Significant decrease*		Same**	Same**
	Change of water quality	Same***	Same*	Same*	Same**	Same**
Implementation processes	Environmental impact assessment	EIA*				

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Explanatory factors	Attributes	Enhanced wellbeing outcomes			Unchanged wellbeing outcomes	
		Pathway 1 (n = 19)	Pathway 2 (n = 18)	Pathway 3 (n = 24)	Pathway 4 (n = 8)	Pathway 5 (n = 7)
	Environmental impact monitoring	No monitoring*				
	Degree of consultation	Ability to negotiate**		Villagers were able to negotiate for deal size, land boundaries, compensation, or benefits**		
	Consent	FPIC**	Not FPIC*			
	Phase of operation	Development phase**	Operational phase*	Operational phase*	Operational phase**	Operational phase*
	Type of investor	Family business**		Private investor*		
	Country of origin of investor	Domestic investor**	Domestic investor*	Domestic investor*	Domestic investor*	
Characteristics of land acquisitions	Product	Livestock**				
	Age of deal operation	0-3 years**				8-11 years*
	Number of affected villages per deal	1**	1*		1**	1*
	Accessibility		0.5-1 hour*	>2 hours*		
	Number of deals in the village		1 deal*		1 deal**	1 deal*
	Type of land document	Land title present**	Land title present*	No land title present*	No land title present**	No land title present*
Socio-ecological context	Main village economy	Lowland farming, cash crop, and livestock*				
	Prior land use	Collecting forest products**	Upland rice*, collecting forest products*	Upland rice*, collecting forest products*	Upland rice*	Collecting forest products*

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Legend				Abbreviations		Consistency
		Enhanced wellbeing outcomes			Unchanged wellbeing outcomes	
Explanatory factors	**Attributes**	**Pathway 1 (n = 19)**	**Pathway 2 (n = 18)**	**Pathway 3 (n = 24)**	**Pathway 4 (n = 8)**	**Pathway 5 (n = 7)**
	Contrasting factors across pathways in this outcome pattern			HH = Household		*** = 100%
	Contrasting factors with adverse and/or trade-off outcome patterns					** >= 75%
	Low frequency or consistency					* >= 50%

Note: These pathways do not represent the situation of 16 cases because they did not meet the frequency and consistency thresholds.

Table C-2: Pathways to adverse well-being outcomes

Explanatory factors	Attributes	Pathway 6 (n = 25)	Pathway 7 (n = 11)	Pathway 8 (n = 25)	Pathway 9 (n = 13)	Pathway 10 (n = 9)
Land dispossession and change of well-being resources	% of households who lost land	1-25%***	1-25%***	No land dispossession***	26-50%***	> 50%***
	Access to well-being resource pattern	Adverse**	Adverse*	Adverse**	Adverse**	Adverse**
	Ability to access new land	HHs were able to access new land**	HHs were able to access new land**		HHs were able to access new land**	HHs were able to access new land**
	Delivery of compensation					
Livelihood options/ adaptation	% or working age population employed	No employment***	<= 10%***		No employment*	
	Origin of workers		Affected village: 11, neighboring villages*	Affected village*	Neighboring villages*	Affected village**, neighboring villages*
	Change of employment opportunities over the last five years					
Chemical impact	Fertilizer impact	None*	None*	None*		Very negative*
	Pesticide impact	None*	None*	None**		None*

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Explanatory factors	Attributes	Pathway 6 (n = 25)	Pathway 7 (n = 11)	Pathway 8 (n = 25)	Pathway 9 (n = 13)	Pathway 10 (n = 9)
Water impact	Herbicide impact			None*		
	Change of water quantity	Significant decrease*	Significant decrease*		Significant decrease**	Significant decrease*
	Change of water quality	Same*	Decrease*	Same*	Decrease*	
Implementation processes	Environmental impact assessment	EIA*			EIA*	
	Environmental impact monitoring	Monitoring*		Monitoring*	Monitoring**	
	Degree of consultation					
	Consent			FPIC*		
Characteristics of land acquisitions	Phase of operation	Operational phase*	Operational phase**	Operational phase*	Operational phase*	Operational phase*
	Type of investor				Private investor*	Public investor*
	Country of origin of investor	Economically developing country*	Economically developing country*		Economically developing country**	Economically developing country**
	Product					Rubber*
	Age of operation					8-11 years**
	Number of affected villages per deal				>10**	>10*
	Accessibility					
	Number of deals per village		2-3 deal*	1 deal*	1 deal*	2- 3 deal*
Socio-ecological context	Type of land document	No land title present*	No land title present*			No land title present**
	Main village economy					
	Prior land use	Upland rice*, collecting forest products*, lowland rice*	Collecting forest products*	Upland rice*, collecting forest products*	Upland rice*, collecting forest	Upland rice*, collect forest products**, lowland

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Explanatory factors	Attributes	Pathway 6 (n = 25)	Pathway 7 (n = 11)	Pathway 8 (n = 25)	Pathway 9 (n = 13)	Pathway 10 (n = 9)
					products*, lowland rice*	rice*, garden*

Legend

Contrasting factors across pathways in this outcome pattern

Contrasting factors with enhanced, unchanged or trade-off outcome patterns

Low frequency or consistency

Abbreviations:

HH = Household

Consistency:

*** = 100%

** >= 75%

* >= 50%

Note: These pathways do not represent the situation of nine cases because they did not meet the frequency and consistency thresholds.

Explanatory factors	Attributes	Food security decreased: Pathway 11 (n = 18)	Pathway 12 (n = 10)	Pathway 13 (n = 10)	Pathway 14 (n = 8)	Food security increased: Pathway 15 (n = 15)	Pathway 16 (n = 17)	Pathway 17 (n = 13)	Pathway 18 (n = 7)
Land dispossession and change of well-being resources	% of households who lost land	1-25%***	1-25%***	No land dispose-ssion***	No land dispose-ssion***	>25%***	No land disposs-ession***	1-25%***	>50%***
	Access to well-being resource pattern	Adverse***	Trade-off***	Adverse***	Trade-off***	Adverse**	Adverse**	Adverse**	Trade-off*
	Ability to access new land	HHs were able to access new land***	HHs were able to access new land***			HHs were able to access new land***		HHs were able to access new land***	HHs were able to access new land*
	Delivery of compensate-ion					No compens-ation*			
Livelihood options/adapt-ation	% of working age population employed	No employ-ment*	<=10%*		<=10%**				
	Origin of workers	Affected village*	Affected village**, neighboring villages**	Affected village*, neighb-oring villages*	Affected village**, neighb-oring villages**	Affected village**, neighb-oring villages*	Affected village*	Affected village*, neighboring villages*, other provinces/districts*	Affected village*, neighbo-ring villages*

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Explanatory factors	Attributes	Food security decreased				Food security increased			
		Pathway 11 (n = 18)	Pathway 12 (n = 10)	Pathway 13 (n = 10)	Pathway 14 (n = 8)	Pathway 15 (n = 15)	Pathway 16 (n = 17)	Pathway 17 (n = 13)	Pathway 18 (n = 7)
Chemical impact	Change of employment opportunities over the last five years		Decreased significantly*		Decreased significantly**				
	Fertilizer impact	None*	None**	None**	None**	None*	None*	None**	None*
	Pesticide impact	None*	None*	None**	None**	None*	None**	None**	None*
	Herbicide impact	Very negative*	Very negative*	None*	Very negative*		None*	None**	Very negative*
Water impact	Change of water quantity	Significant decrease**	Significant decrease**	Significant decrease *	Significant decrease **	Significant decrease **	Significant decrease *		Decrease a little*
	Change of water quality	Decrease*	Decrease*	Same**	Significant decrease*	Decrease*	Same*	Decrease*	Decrease*
	Environmental impact assessment	EIA*		EIA*				EIA*	
	Environmental impact monitoring	Monitoring*	Monitoring*	Monitoring*	Monitoring*				
Implementation processes	Degree of consultation			Villagers were able to negotiate for deal size, land boundaries, compensation or benefits*					
	Consent		Not FPIC*	FPIC*	FPIC*, not FPIC*			Not FIPIC*	Not FIPIC*
Characteristics of land acquisitions	Phase of operation	Operational phase*	Operational phase*	Development phase*	Operational phase**	Development phase*	Operational phase*	Operational phase**	Operational phase*
	Type of investor	Private investor*	Private investor*	Private investor*	Private investor**	Private investor*		Private investor**	Public investor*
	Country of origin of investor	Economically developing country**	Economically developing country***	Economically developing country*	Economically developing country**	Economically developing country**			Economically developing country**
	Product	Rubber**			Sugarcane*	Rubber*	Rubber*		Rubber**
	Age of operation		8-11 years**		8-11 years*	8-11 years*			8-11 years*

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Explanatory factors	Attributes	Food security decreased					Food security increased		
		Pathway 11 (n = 18)	Pathway 12 (n = 10)	Pathway 13 (n = 10)	Pathway 14 (n = 8)	Pathway 15 (n = 15)	Pathway 16 (n = 17)	Pathway 17 (n = 13)	Pathway 18 (n = 7)
Socio-ecological context	Number of affected villages per deal		>10*	>10*	>10*	>10*		1*	
	Accessibility		1-2 hours*	3-5 hours*	1-2 hours*	1-2 hours*		0.5-1 hour*	1-2 hours*
	Number of deals in the village	1 deal*	1 deal*	1 deal*, 2-3 deals*	1 deal**	1 deal*	1 deal*		1 deal*
	Type of land document	No land title present**	No land title present**	No land title present**	No land title present**	No land title present*	No land title present*	No land title present*	No land title present**
	Main village economy	Lowland and upland farming and other*	Livestock and other*		Livestock and other**	Lowland, livestock, and cash crop*		Lowland, livestock, and cash crop*	
	Prior land use	Upland rice*, collecting forest products*, lowland rice*	Upland rice*, collecting forest products* *, garden*	Upland rice**, collecting forest products**, garden*	Upland rice*, collecting forest products** *, garden*	Upland rice*, collecting forest products*, lowland rice*	Upland rice**, collecting forest products **	Upland rice**	Upland rice: 7***, collecting forest products*, cash crop*, lowland rice*

Legend

- Contrasting factors across pathways in this outcome pattern
- Contrasting factors with adverse, enhanced and/or unchanged outcome patterns
- Low frequency or consistency

Abbreviations: HH =Household

Consistency: *** = 100%; ** >= 75%; * >= 50%

Table C-3: Pathways to a trade-off between food security, income, and livestock

Note: These pathways do not represent the situation of 12 cases because they did not meet the frequency and consistency thresholds.

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Paper 3: Land-based investments for agricultural commercialization in Lao PDR: improving rural employment or opening doors to precarization?

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Land-based investments for agricultural commercialization in Lao PDR: Improving rural employment or opening doors to precarization?

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Abstract

Labor is central to the debates on global land-based investment. Proponents purport that investments are an avenue for rural transition from resource- to wage-based livelihoods through the generation of employment and contribution to poverty reduction. Drawing on a recent, unique dataset on land concession inventory in Lao PDR, this paper uses an agrarian political economy to investigate how land-based investments live up to this promise. The paper analyzes potential determinants of the degree of local people's engagement in wage-labor within land-based investments. Results show that while land-based investments create a significant amount of employment, only low-skilled and seasonal jobs are offered to former land users. Moreover, rather than contributing to the transition from resource- to wage-based livelihoods, in many cases, land-based investments created a new "relative surplus population" in rural areas. Further, former land users were pushed into precarious conditions through three processes: dispossession without proletarianization; limited proletarianization; and adverse proletarianization. In the case of adverse proletarianization, former land users engaged in wage-employment as a coping mechanism to compensate for loss livelihoods rather than improving their household economies. We argue that the promotion of land-based investments as an approach for rural development, particularly along the gradient of transforming resource- to wage-labor based livelihoods, is ineffectual without concurrent opportunities within and beyond the agricultural sector to absorb the labor reallocated from traditional livelihoods. Enforcing labor regulations, including restrictions on hiring of foreign labor and compliance with minimum wages, are essential to prevent precarization and increase benefits for local people. Further, protecting peasants' individual and common land-use rights is imperative to ensure employment is a choice rather than a last resort resulting from dispossession from land and other resources.

Keywords: land-based investments, dispossession, employment, relative surplus population, precarity, Lao PDR

1. Introduction

The burgeoning expansion of global land-based investments since the 2007-08 food, energy, and financial crises has posed a substantial challenge for sustainable development (Smith, 2018). These investments directly threaten rural livelihoods through the transformation of access to land and resources, labor relations, and environmental degradation, with the potential to push peasants[1] into precarious living conditions (Cotula, 2012; R. Hall et al., 2015; Roudart & Mazoyer, 2016; White et al., 2012). Global growth of land-based investments has slowed since 2012 (Nolte et al., 2016), with new investments temporarily suspended in countries including Cambodia and Lao PDR (Hett et al., 2020; Neef et al., 2013). Nonetheless, systematic assessments of their impacts on rural livelihoods remain critical for managing existing investments and corresponding government strategies, particularly regarding the prominent claims of employment creation (Borras Jr & Franco, 2012; Margulis et al., 2013). Evidence-informed decision-making on a complex issue such as global land-based investments requires systematic analysis combining empirical data with land-based investment implementation processes on the ground across socio-ecological contexts (see Messerli et al., 2015; Oya, 2013a; Schneider et al., 2020). This paper contributes by providing national-level evidence to assess the impacts of a wide range of land-based investments on rural livelihoods and employment.

Land-based investments, or land deals, refer to land acquisitions that entail transfer of land-use rights to domestic or foreign actors through purchase, lease, or concession by the state of often developing host countries (Anseeuw et al., 2012). These investments involve a range of sectors including but not limited to agriculture, mining, infrastructure development, energy and conservation (Borras Jr et al., 2012; Levien, 2011; Mishra & Mishra, 2017; Narain, 2009). In the literature, land investments have often been termed "large-scale land acquisitions" (LSLAs), namely by land-system scholars (Debonne et al., 2018; Messerli et al., 2014). Globally, approximately 68 million hectares are part of such LSLAs (Land Matrix, 2021). However, land use change also occurs at smaller, more incremental scales (Cotula et al., 2009; Friis & Nielsen, 2016). Lao PDR has been heavily targeted for land deals, and more than 70% of its 1,181 total investments are smaller than 200 ha (Hett et al., 2020). In this paper, we examine agricultural investments in Lao PDR of all sizes, ranging from three to 30,000 ha.

Land-based investments can be interpreted as a driver as well as a result of agrarian transition, a shifting from a primarily land-based, subsistence-oriented economy to predominantly wage-based livelihoods. These changes are concomitant to broader societal transformations that result from the integration of a country into the world market and thus, idiotypically, the structural shift from predominantly agricultural to industrial and services-oriented economies (Bernstein & Byres, 2001; Rigg, 2001, 2020). Advanced by advocates of a "trickle-down" logic (Peet & Hartwick, 2015; Potter, 2014) such as the World Bank, land-based investments contribute to economic growth and poverty reduction by mobilizing "idle" lands (Cotula et al., 2009, p. 62; Messerli et al., 2014), facilitating technology and skills transfer, generating employment, and raising rural wages (World Bank, 2008, 2009, Deininger & Byerlee, 2011). In contrast, critical scholars have argued that land-based investments are a process for local elites and (trans)national actors to gain control of the means of production in the Global South, referred to as "global land grabbing" (Borras Jr & Franco, 2012; D. Hall, 2013). Thusfar, job creation by land investments has been less than expected (Hallam, 2009) and, although evidence is scattered, it typically reveals that former land users are rarely employed (Levien, 2013; T. M. Li, 2011). Further, adverse impacts of investments, including dispossession of land

[1] In this paper, we subscribe to Bernstein's definition of "peasants," referring to agricultural petty commodity producers who mainly rely on internal resources including land, natural resources, animals, crops, seeds, water, skilled labor, knowledge, saving, networks, etc., together with other economic activities to produce for subsistence and/or reproduction through a certain degree of labor and market relations in the capitalist development (Bernstein, 2010; Bernstein et al., 2018).

and associated resources, often outweigh the benefits of employment, with the most severe impacts borne by the most vulnerable groups (Baumgartner et al., 2015; De Schutter, 2011; Dell'Angelo et al., 2017, Schoneveld, 2020).

This debate suffers from an absence of systematic analysis on labor and employment, particularly with consideration of the heterogeneity of investments across geographical conditions, land use types, and socio-ecological contexts (D. Hall, 2013; Oya, 2013a). Previous analyses have primarily drawn from single case studies that provide a depth of understanding in specific contexts (e.g. Baird et al., 2018; Gyapong, 2019; Kenney-Lazar, 2012; T. M. Li, 2011), but are often problem-driven, focusing on cases with reported negative impacts, resistance, and large-scales (i.e. >200 ha) (see Cipollina et al., 2018; De Schutter, 2011; Messerli et al., 2013; Oya, 2013a). In reality, global land-based investments vary greatly in size and scope (Cotula et al., 2009; Friis & Nielsen, 2016; Hett et al., 2020; Xu, 2018), implementation (Oya, 2013a), and impacts (D. Hall, 2013; R. Hall et al., 2015; Zhan et al., 2015). The effect on rural livelihoods and employment is likely to vary accordingly (Deininger & Byerlee, 2011; Nolte & Ostermeier, 2017). To understand the effects of this variation, this paper uses an agrarian political economy to explores how land-based investments for agricultural purposes affect rural employment along the gradient of rural transformation from resource- to wage-based livelihoods in Lao PDR, by analyzing a recent unique inventory of land concessions in Lao PDR, including 164 deals across 282 affected villages. The dataset consists of quantitative and qualitative information across a wide range of land deals, and provides the most up-to-date national data on land deals available globally (Hett et al., 2018). Specifically, we hypothesize that the number and quality of jobs created by land-based investments for agricultural purposes varies across types of investments, implementation processes, and socio-ecological contexts. The degree to which peasants engage in wage-labor in the context of land-based investments is also, therefore, determined by these factors.

The remainder of this paper is organized as follows. The second and third sections provide a brief overview of policies promoting land-based investments for rural development and policies surrounding rural livelihoods, land tenure, and labor in Lao PDR. Sections four and five describe key concepts and materials, data, and methods used for the analysis. The main findings and discussion of the results are presented in the sixth and seventh sections respectively. Conclusions and key policy recommendations are drawn in the final section.

2. Promoting land-based investments for rural development in Lao PDR

Land-based investments have been a primary driver of Lao PDR's steady economic growth at well above 10% GDP per capita over the last decade (World Bank, 2015, 2018). Land-based investments have been promoted by the Government of Lao PDR (GoL) since the country's economic liberalization in the late 1980s, and was further reinforced in the mid-2000s under the framework of, "Turning the land into capital" (Kenney-lazar et al., 2018). Since then, land-based investments have skyrocketed, with more than 1.02 million ha, or roughly four percent of the country's territory, granted to domestic and foreign investments for mineral extraction, agricultural production, and hydropower development. Although the share of domestic investment has grown since the 2010s, the majority of the concession area remains under foreign investment (Hett et al., 2020).

The GoL's rationale for the promotion of land-based investments is two-fold. First, land-based investments contribute to the national revenue through taxes and royalties. Secondly, land-based investments are expected to support the rural transformation from a predominantly subsistence to a market-oriented economy, contributing to overall poverty reduction. Despite decreasing poverty, approximately 24.5% of the total population were living under the national poverty line in 2015, with an even higher average rate of 31.6% in rural areas (Bader et al., 2016; Coulombe et al., 2016; Epprecht, Bosoni, et al., 2018). According to the GoL, subsistence livelihoods that rely on smallholder agriculture and forest resources perpetuate poverty and have limited contribution to growth of national

agricultural production and trade (Ministry of Agriculture and Forestry (MAF), 2010). In this view, land-based investments support development through the creation of employment and spillovers in infrastructure, technology, inputs, and market access, enabling peasants to engage in more productive, commercial agriculture. Wage employment created by investments would provide a stable income source for peasants in rural areas (CPI, 2006; GoL, 2004) and market-oriented agricultural production and off-farm jobs offer pathways to permanent employment (MAF, 2010; Ministry of Planning and Investment (MPI), 2016).

To stimulate local benefits, the GoL's policy clearly states that investors should prioritize hiring Lao citizens for employment opportunities, particularly former land users in the local area (GoL, 2013; Science Technology and Environment Agency (STEA), 2005). Foreign labor allowances permit hiring up to 15% of total physical labor and 25% of management or technical experts from foreign countries as necessary (GoL, 2013). Additionally, concession agreements also specify investors' obligation to provide skills training for local people to participate in employment within the investment (Investment Promotion Department (IPD), 2013).

Initial analysis in Lao PDR revealed numerous risks to the local community associated with land-based investments, especially adverse impacts on the local environment and jeopardy of rural livelihoods dependent on natural resources (Baird, 2011; Hett et al., 2020; Kenney-Lazar, 2012; Schönweger et al., 2012). The same studies assessed the benefits of these investments, including employment creation, to be ambiguous or small. Alarmed that the adverse impacts would nullify the benefits and threaten the achievement of sustainable development, the GoL issued several moratoria on land-based investments beginning in 2007. Significantly, the Prime Minister's Order No. 13 (2012) suspended the granting of land to new investments for large-scale mineral activities, and rubber and eucalyptus plantations, the most common agricultural investment at the time. Simultaneously, the GoL requested systematic analysis of land-based investments in order to understand their impacts and improve regulation measures.

3. Livelihoods, land tenure, and the labor force in rural Lao PDR

Although the agricultural sector's share of the country's overall GDP has declined, agriculture remains the primary livelihood source of more than 70% of the country's labor force (World Bank, 2018; Lao Statistics Bureau (LSB), 2016). A large share of the agricultural population produces for subsistence, engaging in diverse livelihood portfolios that includes agricultural production, livestock, collection of forest products, and off- and non-farm employment (Martin & Lorenzen, 2016; Nanhthavong, 2017). While many households engage in commercialized agriculture, most continue to primarily produce for household consumption, only selling surplus production and/or growing cash crops as a secondary engagement (MAF, 2014; Nanhthavong, 2017). This is supplemented by raising livestock as a key method of resilience against unexpected shocks (LSB, 2018). Further, forest resources continue to be a significant source of food and income, particularly for the poorest groups (LSB, 2020). In some contexts, income from forest related resources including non-timber forest products (NTFPs), hunting, fishing, and logging account for up to one-third of annual household income (see Parvathi & Nguyen, 2018; Van Der Meer Simo et al., 2019). Thus, land continues to be a main cornerstone of rural livelihoods in the Lao PDR in a variety of ways.

By Lao law, land is the property of and centrally managed by the state (The National Assembly (NA), 2015). Individual right to private land use is allocated by the state through land titling or customary ownership (GoL, 2003). Efforts to title land have focused on urban and peri-urban areas, with an emphasis on land used for non-agricultural purposes (Hirsch, 2011). Regulated rural land tenure is weak. Peasants often do not receive land titles, instead relying solely on customary land-use rights (Dwyer, 2017; Kenney-Lazar, 2013), placing them at risk to being coercively dispossessed, such as by land-based investments (Baird, 2011; Dwyer, 2007). Land use types such as forest or pasture belong to the state and are managed by communities, allowing peasants access for food or

income sources and other ecosystem services (Dwyer, 2017). Individual landholding by peasants varies across geographical regions depending on terrain conditions. Rural households typically hold multiple plots, with an average of 2.4 ha per households (MAF, 2014). Households in the central, lowland region typically hold larger parcels of land with an average of 3.1 ha per household, in contrast to northern, mountainous regions where the average is only 1.3 ha. In upland areas, especially in the north, there are large areas of arable land that remain uncultivated (Epprecht, Weber, et al., 2018).

Unfortunately, there are limited employment opportunities outside of the agricultural sector to absorb labor displaced by substitution through mechanization or chemical inputs. The rural population does not benefit from the high-paid, urban employment opportunities, nor are they qualified for jobs created by development projects in rural areas (World Bank, 2015). Their livelihood perspectives are further exacerbated by resource scarcity and displacement caused by development projects, including but not limited to land-based investments, hydropower dams, and mining. Rural laborers, particularly youth, are increasingly migrating temporarily or permanently to urban or cross-border areas in search of employment (Andriesse & Phommalath, 2012; Barney, 2012; Cole & Rigg, 2019; Epprecht, Bosoni, et al., 2018; Manivong et al., 2014; Rigg, 2007). Many rural migrants engage in low paying jobs in garment factories, shops, restaurants, or construction due to their lack of specific skills (Lao People's Revolutionary Youth Union (LYU) & UNFPA, 2014).

Roughly 85% of the labor force is literate but less than one-fifth has received vocational training or a university degree. Literacy rates are especially low for rural women, of whom only slightly more than half complete primary school (LSB, 2016). More than 80% of the labor force are engaged in the informal sector (LSB, 2018). Further, studies highlight a mismatch between the supply of training received by the educated and the required skills in the labor market in Lao PDR (World Bank, 2014). Despite increasing numbers of graduates from secondary and tertiary education, access to skilled-labor remains the most important constraint experienced by the business sector. Generally, Lao university graduates do not have the skills to meet the needs of development and investment projects, especially large-scale infrastructure development and natural resource extraction (World Bank, 2014).

4. Key concepts: Labor relations in the context of land-based investments in low-income countries

We use an agrarian political economy perspective to frame the relation between land-based investments and employment (D. Hall, 2013; Marx, 1976). Framed by an agrarian political economy perspective, land-based investments generated through long-term purchase, lease, or concession resemble the primitive accumulation of early capitalism in its dispossession of peasant land, triggering proletarianization and the establishment of capitalist relations of production (Bernstein, 1977; Hall, 2013; Harvey, 2003; Marx, 1976).

Under 'narratives of scarcity" (Borras Jr et al., 2012; Scoones et al., 2019), the surge of land-based investments in the Global South since the mid-2000s can be explained as a process of global capitalist accumulation by agribusinesses from advanced economies that heavily rely on the import of food and raw materials. Scarcity of land resources and increasing costs of labor have spurred the shift or expansion of production into regions with abundant land and lower labor costs (Anseeuw et al., 2012; GRAIN, 2008; Zoomers, 2010). This process is often facilitated by the states of low-income countries, who, in seeking to attract investment, adopt narratives of land abundance and surplus labor (Arnold & Pickles, 2011; Carroll, 2020; Deininger & Byerlee, 2012; H. Li et al., 2012). The prominent role of the state has been described as "state landlordism" (Cipollina et al., 2018, p. 14), and is particularly evident in contexts of insecure land tenure and close relations between investors and states (Byerlee, 2014).

Capitalist accumulation by dispossession (Hall, 2013; Harvey, 2003) describes a process by which peasants are expropriated from land and related resources that they rely on for food and income generation, separating them from the means of production and creating conditions for reliance on wage-based incomes (Bernstein, 1977; Marx, 1976, Levien, 2011). This can be observed in three pathways. First, fully dispossessed peasants may become fully proletarianized and become dependent on wage-employment. This is especially the case for those lacking alternative means (Harvey, 2003; Marx, 1976). Second, peasants who experience partial dispossession may become semi-proletarians, continuing smallholder agricultural production while simultaneously searching for adequate wage-labor to compensate for their losses (Kenney-Lazar, 2012). Third, dispossessed peasants may be excluded from processes of proletarianization, for instance, where land-based investments fail to generate local wage-employment or peasants themselves lack the means to engage in wage-labor (Dinerstein, 2002). In these cases, peasants may resort to migration to urban areas or across borders in search of employment, which is an increasingly common livelihood strategy throughout the Global South and in Southeast Asia (Cole & Rigg, 2019; Rigg, 2016; Tappe & Nguyen, 2019).

In late capitalism, capitalist accumulation not only changes property relations, but also transforms the social relations of production and labor in a manner that can push peasants into precarious conditions (Kusakabe & Myae, 2018; T. M. Li, 2009; Tappe & Nguyen, 2019; Cruz-Del Rosario & Rigg, 2019). Precarity was initially advanced to study wage-labor conditions of late capitalism and the contrast between precarious and standard employment in the Global North, and has been more recently applied to contexts in the Global South (Cruz-Del Rosario & Rigg, 2019; Ettlinger, 2007; Standing, 2011). The concept of precarity is multifaceted, varying across time, and socioeconomic and political contexts. While it has been applied broadly to "life" (Lewis et al., 2015), here we focus on precarity specifically applied to precarious labor conditions in a capitalist economy (Strauss, 2017; Waite, 2009). In their application of precarity to the contexts in the Global South, Rigg et al. (2016) distinguish between vulnerability as traditional forms of livelihood exposure, in contrast to the produced, modern exposure associated with precarity. Neither condition is within the influence of individual households. This distinction highlights differences in the process of exposure in production and reproduction, noting a triangular relationship where development and economic growth can create, "(possibly) declining vulnerability on the one hand and (possibly) growing precarity on the other," (Rigg et al., 2016, p. 66). In the context of land-based investments, precarization frames how labor relations are shaped through the transformation of peasants' access to land and resources as well as social capital and other community-based resilience structures throughout the transition from resource- to wage-based livelihoods. Precarity thereby describes an unsettled state of fluctuation barely above or below the poverty threshold, with no buffer and no perspective of building one, and always at risk of nosediving.

While land-based investments may increase income and widen livelihood options in some cases, risks associated with land dispossession are unilaterally shifted onto peasants. In this respect, partial integration of rural populations into land-based investment activities disrupts the risk-distribution logic of land-based livelihoods (see T. M. Li, 2015). Traditionally, land-based livelihoods are based on risk-minimization, which often entail spreading income sources across numerous livelihood activities in order to reduce vulnerability. Reduction of diversification options, such as deprivation of access to communal resources, can therefore undermine livelihoods, increase vulnerability and significantly reduce resilience to shocks (Bouahom et al., 2004; Martin & Lorenzen, 2016). Compensation schemes are often uneven, inadequate, and quickly expended due to a lack of investment opportunities (Baird, 2011; Kenney-Lazar, 2012; Doss & Meinzen-Dick, 2018). Coupled with increased dependency on unstable wage income, peasants are potentially pushed into precarious conditions, in a process described by Rigg and colleagues as "truncated" agricultural transition (2018).

According to Standing's definition, in the development process, a "precariat" refers to a person becoming a proletariat through engaging in casual labor with poor labor conditions and low incomes, or the jobless who have been excluded from proletarianization (2011). In our paper, we define precarious labor in the context of land-based investments as the exclusion of displaced peasants from employment opportunities created by land-based investments that may deteriorate peasants' food security and/or income, or the inclusion of displaced peasants in wage-labor through unfavorable terms including low wages, lack of job security, lack of opportunities to attain skills, or vulnerability due to exclusive dependence on unreliable wage-labor such as low quality and seasonal jobs with low wages with land-based investments (see also Cruz-Del Rosario & Rigg, 2019; Rigg et al., 2016). As such, we assess two aspects of precariousness. We examine first, the exclusion of displaced peasants from employment opportunities, and second, the quality of employment offered to displaced peasants. Assessment of quality encompasses types of jobs, job security including consideration of seasonality and development cycle, and wages compared to the national official minimum wage.

5. Materials and methods

5.1. Data

We use the GoL's 2017 Lao National Land Concession Inventory (LCI), which compiled data from various government sectors across administrative levels between 2016 and 2017 (see Hett et al., 2020). The LCI provides two data components. First, quantitative data is provided on the main characteristics of all agricultural land-based investments, comprised of 777 deals covering roughly 0.6 million ha of granted area in all 18 provinces of Lao PDR. These characteristics include type of commodity, origin of investors, size (in ha), and spatial components. Building on the quantitative data, qualitative data for 179 deals covering an area of 196,880 ha in nine provinces is provided on the implementation process and impacts on the environment, economy, and society, including employment. These provinces included Oudomxai, Luang Prabang, and Xieng Khouang in the north, Vientiane, Khammouan, and Savannakhet in the center, and Saravan, Sekong, and Attapeu in the south. In addition to the quantitative data, we examined a subset of 164 out of the 179 deals with complete data on employment from the qualitative LCI. Two-thirds (n = 98, 111,145 ha) of these were in the operational phase, while the remainder (n = 66, 55,227 ha) were still in the development phase at the time of assessment. These deals are summarized in Table A of the Appendix. The size of the deals is presented in Figure 1. The majority of land deals in the sample are small-scale, with almost half receiving a granted area between 100 and 500 ha each. Approximately just one-fifth of the deals were granted areas greater than 1,000 ha.

The qualitative data was collected through semi-structured interviews with government representatives, companies, village committees, and former land users. Village committees group interview were conducted with village chiefs, representatives of the youth union and the women's union, and the elderly. Group interviews with former land users were conducted in 282 affected villages with representatives of households who did and did not lose land, and who did and did not have members employed in wage-labor with the land deal. Participants were selected by the village chief. Company interviews were conducted with 118 companies, as presented in Table B in the Appendix (see Hett et al., 2018). Variables, their measurement, and data sources included in the analysis are presented in Table 1.

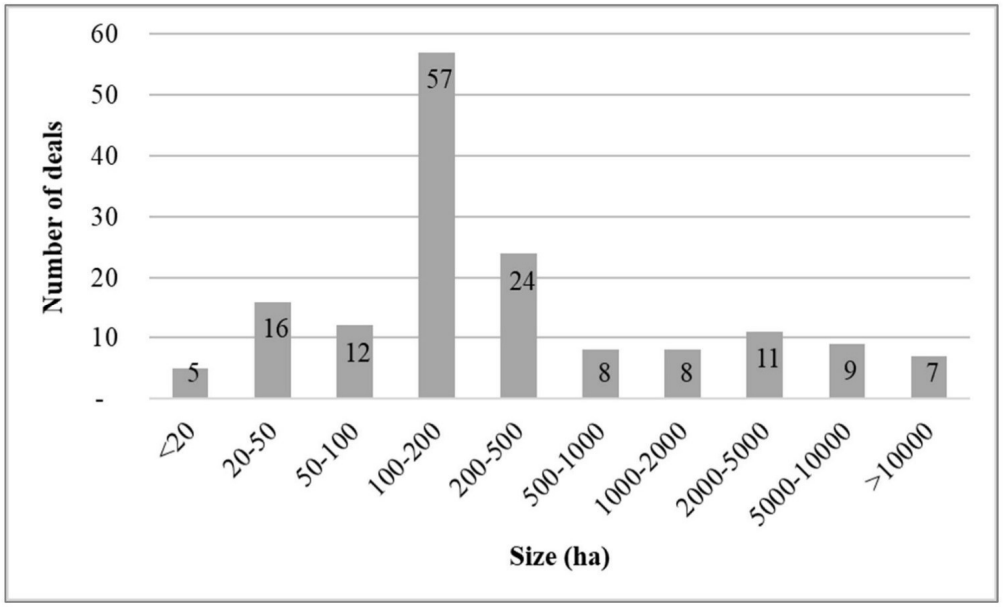

Figure 1: Distribution of granted area size of sample land deals

Table 1: Variables included in analysis, their measurement, and source

Variables	Measurement	Source
Employment and impacts on livelihood resources		
Number of jobs created by land-based investments	The number of jobs created by a land-based investment, including whether those positions are filled by foreign and local recruits	Company interviews (LCI)
Types of jobs created by land-based investments	Types and number of jobs, including: 1) Skilled-labor and salaried job including management, technical expert, transport, and security guard; 2) Low-skilled labor and seasonal job including clearing land, digging, planting, weeding, applying agrochemicals, applying fertilizer, and harvesting.	Company interviews (LCI)
Jobs accepted by former land users	Number and types (same as above) accepted by former land users	Interviews with former land users (LCI)
Working-age population in the affected village	Population between ages 15 and 64 years	2015 Lao Population and Housing Census (PHC) (LSB, 2016)
Wages	Wages by type of job	Interviews with former land users (LCI)
Proportion of dispossession	Percentage of households per village experiencing a partial or complete loss of	Interviews with village committees (LCI)

Variables	Measurement	Source
	individual land ownership to land-based investments	
Extent of individual land dispossession	Average number of hectares lost per household per village	Interviews with village committees (LCI)
Change in access to farmland	Change in access to farmland since the establishment of a land-based investment in the village, scale ranging from "increased a lot," "increased a little," "unchanged," "decreased a little," and "decreased a lot"	Interviews with former land users (LCI)
Change in the availability of NTFPs and wild animals	Change in the availability of NTFPs and wild animals since the establishment of a land-based investment in the village, scale ranging from "increased a lot," "increased a little," "unchanged," "decreased a little," and "decreased a lot"	Interviews with former land users (LCI)
Change in large livestock production	Change of the number of large livestock (e.g. cattle and buffalo) since the establishment of a land-based investment in the village, scale ranging from "increased a lot," "increased a little," "unchanged," "decreased a little," and "decreased a lot"	Interviews with former land users (LCI)
Characteristics of land-based investments		
Type of commodity	Category of commodity invested in by the land-based investment including crops, livestock, and tree plantation	Quantitative component of LCI
Developed area	The area in hectares developed at the time of assessment (as opposed to granted area)	Quantitative component of LCI
Origin of investors	Origin of the investor as stated in the business registration including domestic, foreign, or joint venture	Quantitative component of LCI
Phase of operation	Whether a deal is still in the development or in the operational phase at the time of assessment	Quantitative component of LCI
Socio-ecological contexts of targeted villages or land-based investments		
Villages' main economic activities	The three most important economic activities in terms of time and labor allocation per village	Interviews with village committees (LCI)
Terrain	The slope of the area under land-based investment implementation categorized as: - Flatland with a slope <9% - Slightly sloped land with a slope between 9-30% - Steeply sloped land with a slope >30%	The eight classes of slope data derive from FAO Soils Portal (Fischer et al., 2008), reclassified into three classes in ArcGIS (ESRI, 2011)

Variables	Measurement	Source
Accessibility	Measured by travel time (in hours) from the area under land-based investment implementation to the nearest provincial capital	Calculation in ArcGIS (ESRI, 2011) using the 2015 PHC data (Epprecht, Bosoni, et al., 2018) following the approach suggested by Epprecht et al. (2008)

5.2. Analysis

5.2.1. Livelihood contexts of sampled villages

To contextualize the impact of employment created by land-based investments on the rural livelihoods and safety nets, we examined the village economy, extent of land dispossession, and changes in access to other livelihood resources, such as NTFPs, wild animals, and livestock.

5.2.2. Job creation and peasant engagement in employment with land-based investments

To gain understanding of the process of job creation and peasant engagement in employment with land-based investments, we constructed three models for ordinary least squares regression. First, we explored the average number of jobs created by land-based investments per hectare, calculated by dividing the number of jobs created by the total developed area, as suggested by Nolte & Ostermeier (2017). This model is structured as:

$$Y_i = \alpha + \beta_1 X_{i1} + \gamma_1 D_{i1} + \gamma_2 D_{i2} + \delta_1 E_{i1} + \theta_1 F_{i1} + \theta_2 F_{i2} + \varepsilon_i \quad (1.a)$$

$$\varepsilon_i \sim N(0, \sigma_\varepsilon^2) \quad (1.b)$$

where Y_i represents the continuous dependent variable of average number of jobs by ha created by deal i and α is the regression constant. The terms β, γ, δ, and θ represent the respective coefficients to variables X_1, the continuous size of the land deal in ha, D, the categorical commodity type of investment, and E, the binary phase of development, and F, the categorical terrain. The error term is represented by ε and is assumed to be independently distributed with zero mean and finite variance.

We then considered the determinants of peasant engagement with the created employment, measured by the share of peasants employed by land-based investments of the working-age population in the village. The model is structured as:

$$Y_i = \alpha + \beta_1 X_{i1} + \beta_2 X_{i2} + \beta_3 X_{i3} + \gamma_1 D_{i1} + \gamma_2 D_{i2} + \delta_1 E_{i1} + \theta_1 F_{i1} + \theta_2 F_{i2} + \lambda_1 G_{i1} + \lambda_2 G_{i2} + \varepsilon_i \quad (2)$$

where Y_i represents the continuous dependent variable of the share of peasants employed. The model retains the explanatory variables from equation (1.a) with the addition of continuous variables X_2, representing accessibility, and X_3, representing land dispossession, and categorical variable G, representing the origin of investment.

The final model compliments the previous by exploring the share of foreign employed labor by each land deal, specified as:

$$Y_i = \alpha + \beta_1 X_{i1} + \gamma_1 D_{i1} + \gamma_2 D_{i2} + \delta_1 G_{i1} + \delta_1 G_{i2} + \varepsilon_i \quad (3)$$

where Y_i represents the share of foreign labor employed by deal i.

The included explanatory variables span investment characteristics and socio-ecological contexts that may influence job creation and peasant engagement. Job creation may vary with the size of the land deal, as larger deals may require more labor than smaller-scale ones (Andersson et al., 2016; Davis et al., 2014). Commodity type may also be a factor, as certain commodities can be produced with capital substitution of labor, while others are more labor-intensive (Deininger & Byerlee, 2011). Nolte & Ostermeier (2017) suggest that annual crops are more likely to be cultivated through capital-intense methods compared to perennial crops, which are considered to be more labor-intensive. The number of jobs may also potentially differ throughout the development phases of the investment, and it is generally expected that employment opportunities would significantly increase once the deal reaches its full operational stage (Cotula, 2014; Deininger & Byerlee, 2011). Further, terrain could influence the mode of production of the investment. Flatland, such as in southern Lao PDR, is more conducive to mechanization, especially in large-scale deals (Hett et al., 2020). In contrast, machinery is rarely used in the northern region due to steep slopes and other topographical constraints. Mechanized production requires lower labor inputs (Nolte & Ostermeier, 2017). Finally, previous studies have suggested that foreign investors tend to import workers from their origin countries rather than hiring local workers (Baird et al., 2018; Kenney-Lazar, 2012).

Peasant engagement in employment may be further influenced by the accessibility of the village and the degree of land dispossession. Accessibility has been shown to impact the availability of development opportunities in Lao PDR, which vary across geographical regions (Epprecht et al., 2008). Proximity to the provincial capital may offer better access to markets, public services, transportation, and communication networks, and people living in this area tend to have a greater choice of livelihood options. For this reason, low-quality jobs offered by land-based investments (Gyapong, 2019; Pye et al., 2012) may not be attractive to people in more accessible areas. Limited opportunities in rural areas may be exacerbated through land and associated resource dispossession (Borras Jr & Franco, 2013; T. M. Li, 2011). The extent of their dispossession may therefore be a determinant in the degree of peasants' engagement in wage-labor, with some peasants being forced to rely on wage-labor due to a lack of alternatives (Kenney-Lazar, 2012; Roudart & Mazoyer, 2016).

5.2.3. Job quality within land-based investments

After examining job creation and peasant engagement with employment within land-based investments, we sought to further understand the quality of these jobs. First, we summarized the types of jobs created by each investment as reported by company interviews, and the types of jobs offered to or accepted in each village, disaggregated by gender, as reported by former land users. Second, we summarized wages by nature of jobs such as type of job, nature of employment including salaried or seasonal labor, and phase of operation including development or operational. Workers employed by land-based investments are compensated in different ways, depending on the nature of the job. Compensation schemes include salary and daily- or productivity-based wages (e.g. per hectare of weeding or per number of holes dug for crop planting). In order to compare wages across compensation schemes, we converted all compensation into daily wages[2]. Monthly salaries were divided by 21.75 working days. Area-

[2] Jobs for which wages are paid monthly include management, technical expert, transport, and security positions. Soil preparation, planting, and weeding were reported based on productivity (per hole, seedling, or by area).

based wages were estimated as requiring approximately 10 person-days to clear one ha of vegetation. The number of person-days was estimated by dividing the area-based wage by the daily rate paid for similar jobs in the same province. For hole digging-based wages for tree planting, we estimated that one worker digs approximately 150 holes per day. We consider this to be realistic, as it equates to daily wages for similar work in the same province (see Hett et al., 2020). We then compared the wages to the 2015 official minimum wages (MLSW, 2015). While this method does not capture differences in the precarity of various compensation schemes, such as employment benefits, this method allows for comparison of monetary compensation.

5.2.4. Transformation of rural livelihoods

Finally, we link the results of our analysis to the livelihood contexts in the villages through the qualitative data gathered from former land users, to gain a more comprehensive view of the transformation of rural livelihoods induced by land-based investments in relation to precarity. We categorize villages that were included or excluded from employment opportunities based on interviews with former land users. Inclusion in employment is defined as villages with at least one peasant employed with a land-based investment. Importantly, inclusion or exclusion is based on the existence of employment. Therefore, the creation of employment and acceptance or refusal of employment by former land users cannot be distinguished with the currently available data. We link this inclusion or exclusion to the contextual land dispossession and changes in access to livelihood resources. Lastly, we examine reasons given for exclusion as reported by excluded former land users.

5.3. Limitations

There are methodological limitations that should be considered in interpreting our findings. First, in modeling the proportion of peasants employed by the land deal, the size variable refers to the total developed area per land deal, rather than land loss per affected village. In many cases, a land deal affected more than one village and the extent of land acquired varies greatly from one to another village. Further, the extent of land loss in each village correspondingly varies, however, this data is not available in the LCI. Another limitation relates to comparing employment creation across villages. In this paper, we considered the share of peasants in the total working-age population in the affected village who were employed by land deals. However, in some cases, this measurement may be biased towards areas of low population density. In general, remote areas in Lao PDR have lower population densities (LSB, 2016), hence the share of peasants employed in wage-labor with land deals may behigher than in areas of high population density.

6. Results

6.1. Livelihood contexts of sampled villages

6.1.1. Main economic activities

Agricultural production was the most crucial activity for local livelihoods (Figure 2). The majority of affected villages (86%, n = 240) reported lowland or upland rice production (the staple food in Lao PDR) as the primary economic activity. Livestock raising and cash crop production together were reported as second and third most important economic activities, accounting for 65% (n = 182) of the secondary economic activity and 64% (n=179) of the third economic activity. Employment was not the primary activity in any of the villages, appearing only as the third most important activity in a small proportion of villages (6%, n = 18).

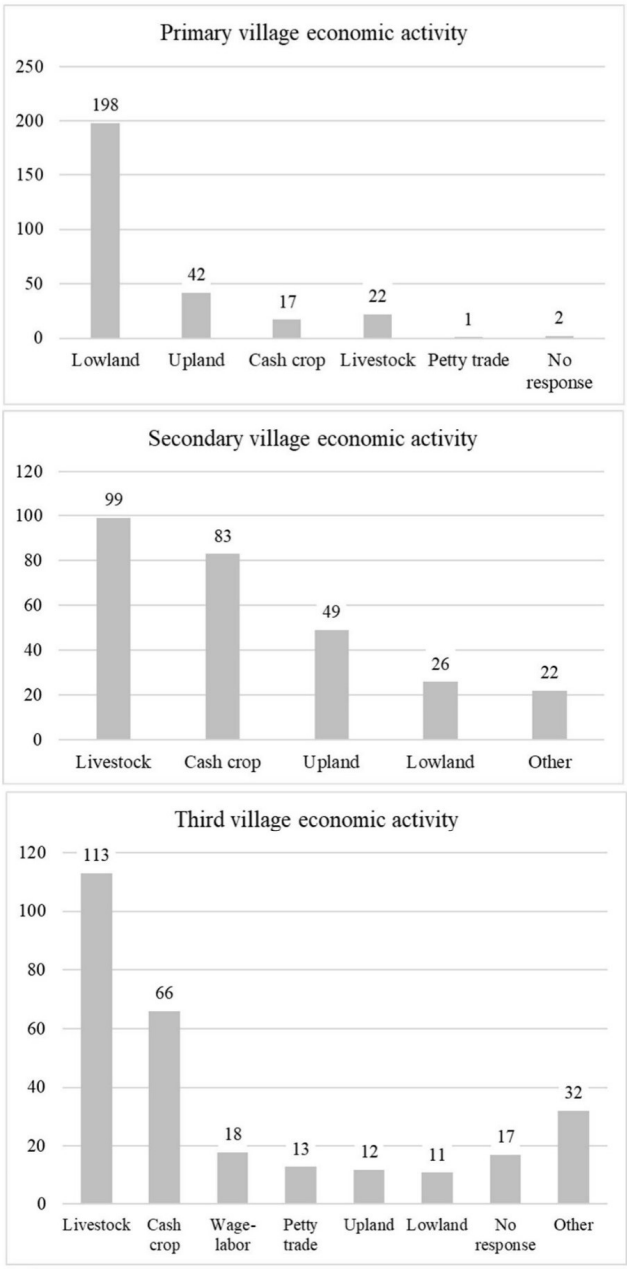

Figure 2: The three most important economic activities in affected villages based on interviews with village committees

6.1.2. Land dispossession and change in access to farmland and livelihood resources

Not all villages experience loss of individual land to investments. Approximately one-third of affected villages reported loss of only communal land, such as forest and pasture lands. The remaining 60% of affected villages experienced some degree of individual land loss (Table 2). On average, 25% of households experienced individual land loss per village (min = 0.31%, max = 100%, SD = 28%). The majority of households lost individual land in only 10% of affected villages, and in only 3% of villages did all households experience individual land loss. Households who did lose land however, lost substantial amounts. Households lost an average of 2.61 ha (min = 0.17 ha, max = 13.04, SD = 2.28), greater than the national average landholding by smallholders in Lao PDR of 2.4 ha per household (MAF, 2014).

The average proportion of households with individual land loss per village and the average amount of land loss per household were greatest among tree plantation investments and in large-scale deals (see

Table 2-A and Figure 3). The extent of land dispossession also differed between origin of investors, with a greater extent of loss occurring in foreign investments (Table 2-B).

Table 2: Number of households in affected villages with individual land loss based on interviews with former land users

A) By type of commodity

Type of commodity	Affected villages with individual land loss		Percentage of households with individual land loss in the affected village			
	Number[a]	Percentage	Mean	Min	Max	SD
Crop (n = 67)	45	67%	16	0.31	82	18
Livestock (n = 44)	15	34%	13	0.70	45	15
Tree plantation (n = 171)	108	63%	30	0.31	100	31
Total (N = 282)	**168**	**60%[a]**	**25**	**0.31**	**100**	**28**

B) By origin of investors

Origin of investors	Affected villages with individual land loss		Percentage of households with individual land loss in the affected village			
	Number[a]	Percentage	Mean	Min	Max	SD
Domestic (n = 83)	36	43%	15	0.64	53	16
Foreign (n = 177)	124	70%	29	0.31	100	30
Joint venture (n = 22)	8	36%	10	0.31	30	10
Total (N = 282)	**168**	**60%[a]**	**25**	**0.31**	**100**	**28**

[a] The rest of villages lost communal land such as forest, pasture land, etc.

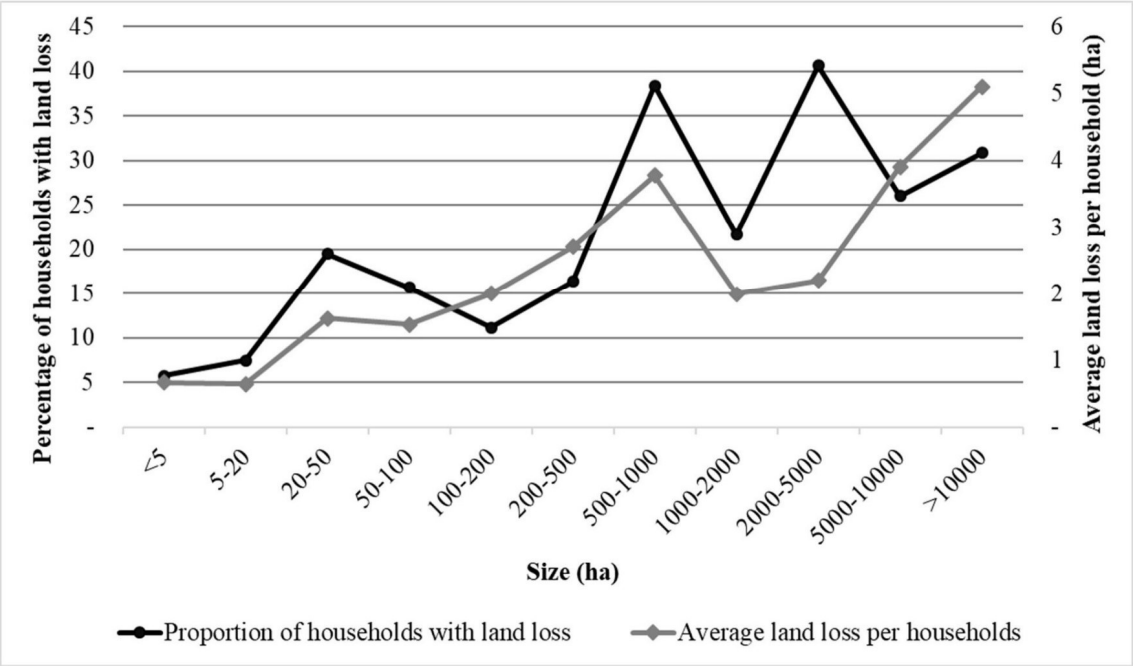

Figure 3: Individual land loss and size of land-based investments

Figure 4 presents the changes in access to farmland, availability of NTFPs and wild animals, and the number of livestock since the establishment of land-based investments in an affected village. Overall, tree plantations had the greatest adverse impacts on access to farmland compared to other commodities, with nearly 80% (n = 133) of affected villages claiming that access to farmland has decreased. Most villages affected by tree (91%, n = 156) and crop (78%, n = 52) deals experienced decreases in the availability of NTFPs and wild animals. Livestock deals did not affect the availability of these resources, and most villages experienced increased or unchanged numbers of livestock.

In total, only 15 villages did not experience either individual land dispossession or decreases in access to farmland, availability of NFTPs and wild animals, and the number of livestock since the establishment of a land-based investment.

6.2. Jobs created by land-based investments

On average, land-based investments created 0.5 jobs per hectare of developed area (min = 0.005, max = 12, SD = 1.36), and nearly 90% (n = 72) of deals offered less than one job per hectare. Regression analysis on model 1.a on the average number of jobs created revealed a strong relationship to the type of land deal. Predictors in our model explained 23% of the variation ($R^2 = 0.23$, $F(6, 100) = 5.07$, $p < 0.001$) (Table 3). Two significant relationships were suggested. First, crop deals create a significantly greater number of jobs per hectare than tree plantations ($\beta = 0.28$, $p < 0.01$). Second, a greater number of jobs per hectare is created by deals that have already reached operational stage, compared to those still in development ($\beta = 0.14$, $p < 0.10$).

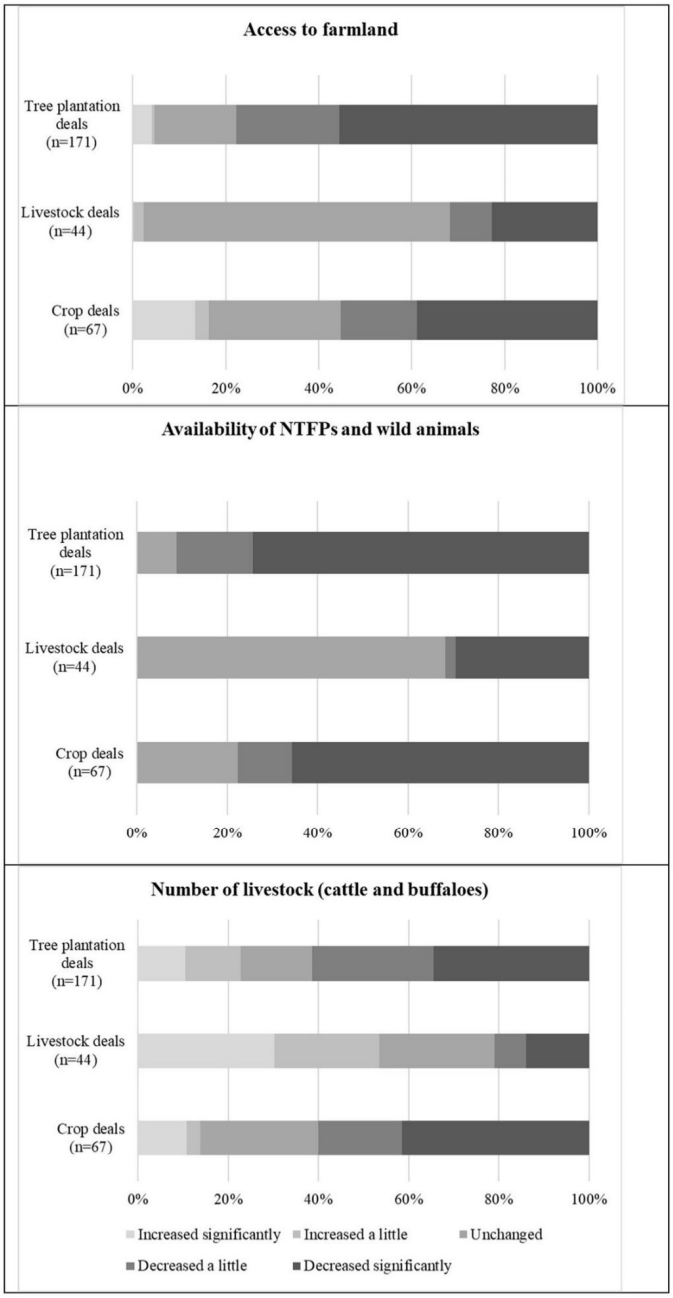

Figure 4: Change of access to farmland, availability of NTFPs and wild animals, and number of livestock in affected villages based on interviews with former land users

Table 3: Determinants of the number of jobs created by land-investments

	Coefficients	Standard error	t - value	p - value
Main effects				
Constant	0.11	0.82	1.45	0.15
Size	-0.00002	0.00001	-1.60	0.11
Tree plantation	reference			
Crop	0.28	0.81	3.50	<0.01***
Livestock	0.51	0.86	0.60	0.55
Development phase	reference			
Operational phase	0.14	0.73	1.89	<0.10*
Flatland	reference			
Slope	-0.04	0.08	-0.47	0.64
Steep slope	-0.21	0.13	-1.62	0.11

Number of observations = 107 R^2 = 0.23

F(6, 100) = 5.07 R^2 – adjusted = 0.19

p-value < 0.001***

Note: *, **, *** indicate significance at 10, 5, and 1% levels. Positive coefficients indicate that as the independent variable increases, the dependent variable (here, the number of jobs created per ha) correspondingly increases. Negative coefficients indicate the inverse.

In general, although our data show that a significant amount of employment was created by land-based investments (Table 4), most were in the form of seasonal and low-skilled jobs such as land clearing, digging holes for crop planting, crop planting, weeding, and harvesting. Many jobs requiring higher-skilled labor, such as management, technical experts, and harvesting were fulfilled by foreign migrants. Tree plantations created the greatest absolute number of jobs due to larger-scale deals, while only a small number were generated by livestock deals.

Notably, many land deals, especially tree plantations (50%, n = 25), far exceeded the GoL's allowances on hire of foreign labor. Results of regression model 3 on foreign labor (Table 5) suggests that foreign investments tend to employ more foreign labor compared to the domestic ones ($R^2 = 0.18$, $F(5, 83) = 3.53$, $p = 0.01$). The share of foreign labor employed by foreign investments is approximately 15% higher than in domestic investments ($p < 0.001$).

Table 4: Type and number of jobs created within land-based investments based on company interviews

	Crops (n = 34)		Livestock (n = 34)		Tree plantations (n = 50)		Total (N = 118)		GoL's limits for shares of foreign labor
Type of jobs	**Total number of jobs**	**Share of foreign labor**	**Total number of jobs**	**Share of foreign labor**	**Total number of jobs**	**Share of foreign labor**	**Total number of jobs**	**Share of foreign labor[3]**	
Management	20	20%	24	17%	114	72%	**158**	**57%**	25%
Technical expert	72	8%	31	6%	523	45%	**626**	**38%**	25%
Transport	223	0%	26	0%	84	17%	**333**	**29%**	25%
Security guard	18	0%	22	0%	163	2%	**203**	**2%**	25%
Clearing land	273	0%	3	0%	2,169	0%	**2,445**	**0%**	15%
Digging	123	0%	75	0%	3,322	0%	**3,520**	**0%**	15%
Planting	1,670	0%	122	0%	5,596	0%	**7,388**	**0%**	15%
Weeding	2,558	0%	98	0%	6,142	0%	**8,798**	**0%**	15%
Applying agrochemicals	29	59%	7	0%	1,232	0%	**1,268**	**1%**	15%
Applying fertilizer	408	0%	50	0%	4,624	1%	**5,082**	**0%**	15%
Harvesting	1,533	0%	35	0%	3,454	30%	**5,022**	**20%**	15%
Other	298	0%	76	0%	2,387	4%	**2,761**	**4%**	15%
Total	**7,225**	**2%**	**569**	**1%**	**29,810**	**5%**	**37,604**	**4%**	

Table 5: Effects of types of land deal on the share of foreign labor employed by land deals based on company interviews

	Coefficients	Standard error	t - value	p – value
Main effects				
Constant	5.01	4.50	-1.11	0.27
Size	0.0001	0.0007	0.17	0.86
Tree plantation	reference			
Crop	-0.76	4.58	-0.17	0.87
Livestock	-7.03	6.22	-1.13	0.26
Domestic	reference			
Foreign	14.93	4.84	3.08	<0.01***
Joint venture	5.49	7.33	0.75	0.46

[3] The GoL's limit on hiring foreign labor applies to each, individual business entity. In this paper, we aim to illustrate the type of jobs for which land-based investments are more likely to rely on foreign immigrants, or in other words, jobs that required skills that could not be fulfilled by the Lao labor force.

Number of observations = 89	R^2 = 0.18
F(5, 83) = 3.53	R^2 – adjusted = 0.13
p-value < 0.05**	

*, **, *** indicate significance at 10, 5, and 1% levels. Positive coefficients indicate that as the independent variable increases, the dependent variable (here, the share of foreign labor) correspondingly increases. Negative coefficients indicate the inverse.

6.3. Peasant engagement in employment with land-based investments

6.3.1. Degree of peasant engagement

The degree of peasant engagement in employment with land-based investments measured as the share of the total working-age population in the village employed by the investment varied across types of land deals and contexts. Employment implies that jobs were offered and accepted by former land users; jobs that were offered but not accepted are not captured as part of this analysis. Employment was not created and offered to or accepted by former land users in all affected villages. Two-thirds of affected villages (n = 175) reported that at least one former land user in the village was employed by the land-based investments at the time of assessment. The proportion of villages with workers employed by land-based investments varied between types of land deals. Tree plantations employed former land users in 68% of affected villages and crop deals employed former land users in 67% of affected villages. Roughly one-third of villages affected by livestock deals reported at least one former land user as employed. In approximately two-thirds of the total affected villages, less than 20% (mean = 45%, min = 0.06%, max = 971%[4], SD = 110%) of the working population was employed by the investments.

Results from the regression model on the degree of peasant engagement in wage-labor indicated an association with deal size, origin of investors, extent of individual land dispossession, and accessibility of targeted regions (Table 6). The predictors in this model explained 13% of the variation ($R^2 = 0.13$, $F(10, 205) = 2.96$, $p < 0.001$). Results indicate a negative relationship between the degree of peasants engaged in employment and deal size. An increase in the size of the developed area by one hectare is expected to accompany a decrease in the share of peasants engaged in wage-labor by 0.0008% ($p < 0.05$). Foreign investors hire significantly more workers from affected villages than domestic investments ($\beta = 7.24$, $p < 0.10$). While the model on job creation suggests that deals create more jobs during the operational phase, the model on peasant engagement suggests that former land users are more likely to engage in wage-employment with land deals during the development phase ($\beta = -5.76$, $p = <0.10$).

Significantly, the model further suggests a positive relationship between the share of peasants engaged in wage-employment and the extent of individual land dispossession. A one percent increase in the proportion of households who lost individual land is associated with a 0.17% ($p < 0.01$) increase in the share of peasants engaged in wage-labor. Finally, the model also reveals that a higher degree of peasants engaged in employment occurred in remote areas. With a one hour increase in mean travel time to the nearest provincial capital, the share of peasants engaged in wage-labor with land deals is expected to increases 1.81% ($p < 0.10$).

[4] Means that one villager were employed to function multiple types of job. In this paper, we calculated number of jobs accepted by former land users in the village as compared to total working-age population.

Table 6: Determinants of peasant engagement in employment with land deals as reported by former land users

	Coefficients	Standard error	t - value	p – value
Main effects				
Constant	7.98	4.60	1.73	<0.10*
Size	-0.0008	0.0004	-2.12	<0.05**
Tree plantation	reference			
Crops	0.94	3.56	0.26	0.79
Livestock	-7.17	5.40	-1.33	0.19
Domestic investment	reference			
Foreign investment	7.24	3.89	1.86	<0.10*
Joint venture investment	5.23	6.36	0.82	0.41
Development phase	reference			
Operational phase	-5.76	3.24	-1.78	<0.10*
Percentage of households with individual land loss in the village	0.17	0.06	2.72	<0.01***
Flatland	reference			
Slope	-1.66	3.54	-0.47	0.64
Steep slope	0.03	7.68	0.00	1.00
Accessibility	1.81	0.94	1.73	<0.10*

Number of observations = 216 R^2 = 0.13

F(10, 205) = 2.96 R^2 – adjusted = 0.08

P-value < 0.001***

Note: *, **, *** indicate significance at 10, 5 and 1% levels. Positive coefficients indicate that as the independent variable increases, the dependent variable (here, peasant engagement in employment) correspondingly increases from the constant or reference value. Negative coefficients indicate the inverse.

6.3.2. Quality of jobs offered to peasants

Table 7 presents the type and number of jobs filled by former land users in our sample. Nearly 90% of the total 26,000 jobs employing former land users were low-skilled or seasonal jobs. Most of these were during the development phase, and included land clearing, digging holes for crop planting, planting, weeding, or applying agrochemicals. More than two-thirds of these jobs were created by tree plantations, followed by 19% of crop deals. Nearly two-thirds of all jobs in land-based investments employed women, although the proportion of female and male workers varies across commodities and types of jobs. In tree plantations, female and male laborers were equally employed, while 96% of laborers employed in livestock deals were women. By type of jobs, an equal or

higher share of females were employed in seasonal and low-skilled jobs. Higher skilled jobs were primarily filled by men.

Table 7: Type and number of jobs filled by former land users based on interviews with former land users

	Crops (n = 67)		Livestock (n = 44)		Tree plantation (n = 171)		Total (N = 282)	
Type of job	**Total number of jobs**	**Share of female labor**	**Total number of jobs**	**Share of female labor**	**Total number of jobs**	**Share of female labor**	**Total number of jobs**	**Share of female labor**
Management	3	0%	0	0%	2	0%	**5**	**0%**
Technical expert	13	0%	0	0%	14	7%	**27**	**7%**
Transport	16	0%	5	0%	5	0%	**26**	**0%**
Security guard	20	0%	11	27%	47	2%	**78**	**5%**
Clearing land	132	56%	20	45%	2,746	57%	**2,898**	**56%**
Digging	235	52%	800	100%	3,154	46%	**4,189**	**57%**
Planting	2,161	22%	955	96%	3,496	56%	**6,612**	**51%**
Weeding	542	68%	930	98%	3,718	61%	**5,190**	**68%**
Applying agrochemicals	40	0%	13	0%	358	27%	**411**	**24%**
Applying fertilizer	313	61%	880	97%	2,751	58%	**3,944**	**67%**
Harvesting	1,230	68%	20	100%	691	49%	**1,941**	**62%**
Other	162	54%	61	41%	465	44%	**688**	**46%**
Total	**4,867**	**45%**	**3,695**	**96%**	**17,447**	**54%**	**26,009**	**58%**

Compensation for salary-based jobs was higher than seasonal or low-skilled jobs, particularly among crop deals (Table 8). Wages for seasonal and low-skilled jobs that were offered during the development phase varied across commodity types. In the crop deals, the highest wages are paid for applying agrochemicals and the lowest wages are for soil preparation, including clearing and digging. In contrast, tree plantations paid the highest wages for hole digging and the lowest wages for applying fertilizer. The wages for harvesting in tree plantations are higher than for planting, weeding, and applying agrochemicals. In livestock deals, the highest wages are paid for harvesting, including fodder collection, and the lowest for digging holes to plant fodder.

In comparison with 2015 Lao PDR official minimum wages of approximately 5.6 USD/day[5], compensation for salaried-based employees were generally significantly higher, with the exception of security guards. In contrast, wages for seasonal and low-skilled jobs were primarily lower than the official minimum wage (Table 8).

[5] The exchange rate in 2015 was 1 USD = 8,105 Lao Kip (https://www.xe.com/currencytables/?from=USD&date=2015-01-05)

Table 8: Average wages by nature of employment, phase of operation, and types of the land deal based on interviews with former land users

Type of job	Nature of employment	Phase of operation	Average wage per day (Lao Kip)			2015 official minimum wage (Lao Kip) (MLSW, 2015)
	1 = Salaried employee 2 = Seasonal labor 3 = Not specified	1 = Development 2 = Operational 3 = Both 4 = Not specified	Crops	Livestock	Tree plantation	
Management	1	3	126,500	N/A	No data	45,000
Technical expert	1	3	112,000	N/A	75,333	45,000
Transport	1	3	64,000	58,333	95,500	45,000
Security guard	1	3	41,375[a]	46,000	35,680[a]	45,000
Clearing land	2	1	27,500[a]	55,000	35,528[a]	45,000
Digging	2	1	29,958[a]	22,500[a]	62,727	45,000
Planting	2	1	43,841[a]	53,333	43,848[a]	45,000
Weeding	2	3	47,370	41,250[a]	37,975[a]	45,000
Applying agrochemicals	2	3	101,429	60,000	38,381[a]	45,000
Applying fertilizer	2	3	42,885[a]	45,000	34,685[a]	45,000
Harvesting	2	2	38,545[a]	67,500	46,900	45,000
Other	3	4	41,308[a]	60,500	48,000	45,000

[a]*Wage is lower than the 2015 official minimum wage. N/A = Not applicable meaning there is no peasant employed in this type of job.*

6.3.3. Transformation of rural livelihoods

Responses from interviews with former land users indicate that more than two-thirds (n = 109) of villages that experienced employment creation also experienced land dispossession and/or adverse access to livelihood resources since the establishment of land-based investments in the village. In the 32% (n = 56) of villages that did not experience land dispossession, adverse impacts on access to other livelihood resources was still felt. Land dispossession or adverse impacts on access to livelihood resources were not reported in just 10 of villages.

Employment was not created or refused by former land users in 107 villages. Of these, former land users did not report land dispossession or adverse impacts to access to livelihood resources in only five of these villages. However, in more than half of them (n = 55), land-based investments caused individual land dispossession with or without adverse impacts on access to livelihood resources. On average, 16.20% of households in these villages lost individual land to land-based investments (Min = 1, Max = 100, SD = 20.86). In the remaining villages (n = 47), peasants did not experience individual land loss, but did experience decreased access to livelihood resources including farmland, NTFPs and wild animals, and livestock (Figure 5).

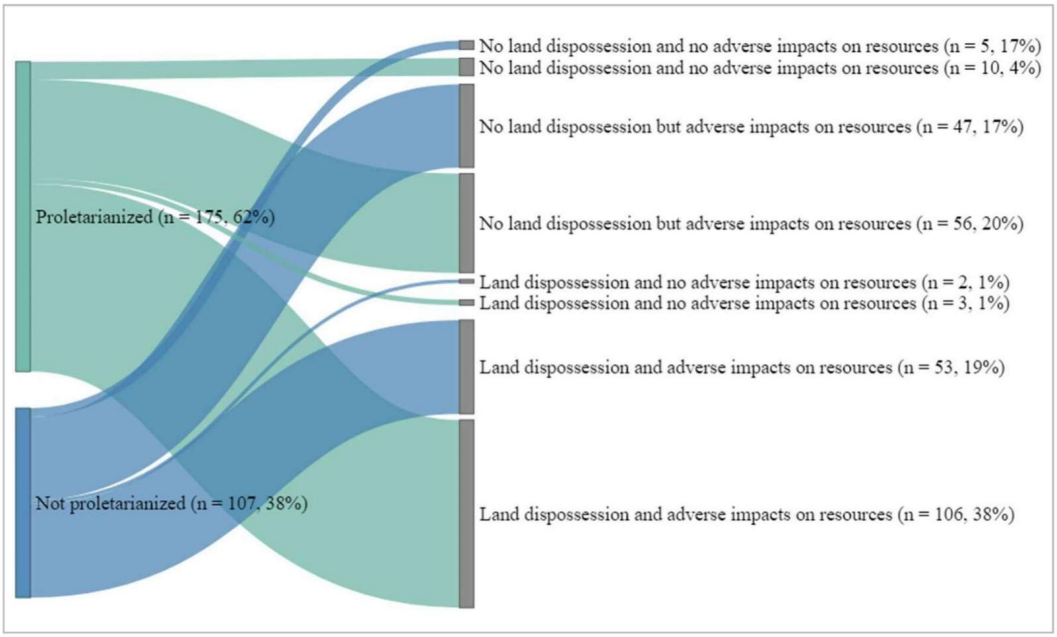

Figure 5: Sampled villages classified by proletarianization, land dispossession and change in access to livelihood resources

Former land users reported several reasons for the lack of employment generation, including refusal of employment opportunities (Figure 6). The most common explanations included investors using their own labor (n = 22), low wages (n = 13), villages never being approached with employment opportunities (n = 9), and workers ceasing employment after experiencing poor working conditions (n = 8). Many villages (n = 37) could not provide an explanation for the lack of employment. Responses further show that although more than half of affected villages (n = 188) stated that they did not receive any training, in most cases lack of skills was not an obstacle for former land users to engage in employment with land-based investments (Figure 7). Approximately half of affected villages (n = 135) reported that workers were provided skills trainings by investors, such as land preparation, cultivation techniques, application of agrochemicals, or harvesting.

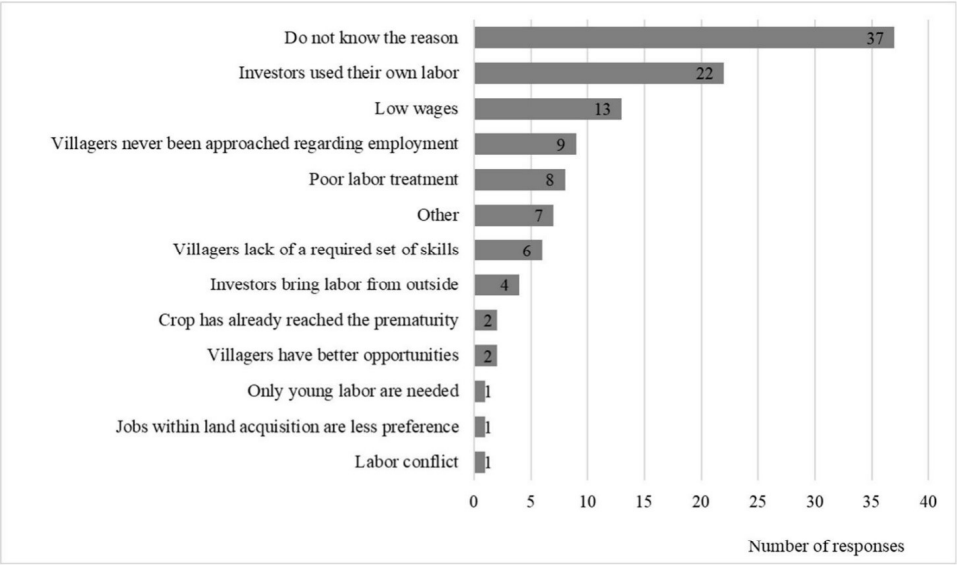

Figure 6: Reasons for employment exclusion or refusal based on interviews with former land users (N = 107)

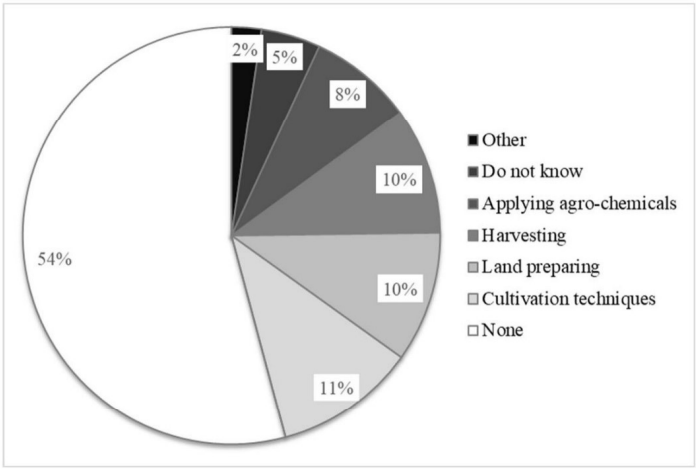

Figure 7: Type of training provided to workers by investors aggregated by share of villages that reported a respective training (N = 282)

7. Discussion

7.1. Land-based investments push displaced peasants into precarious conditions rather than contributing to the transformation from resource- to wage-based livelihoods

Lao PDR has made impressive economic progress in recent decades, with among the strongest economic growth in the region, driven primarily by land-based investments in the natural resources (IMF, 2019). National poverty has decreased sharply (Coulombe et al., 2016), and smallholders have gradually shifted from subsistence agriculture to market-oriented production and non-farm sectors (World Bank, 2018). Yet this national growth is only meaningful for social development when the benefits of growth are distributed throughout the economy. Employment

opportunities for peasants are one way of participation and accrual of benefits through wages (Ferguson, 2015). Nonetheless, our results suggest that while land-based investments transform peasants' access to land and associated resources in targeted villages, their contribution to rural transformation from resource- to wage-based livelihoods is limited. Although significant employment opportunities are created within land-based investments and a large number of former land users engage in these opportunities, smallholder agriculture continues to prevail as the primary economic activity in all villages of our sample. Wage-labor was the third most important economic activity in only a handful of villages. Our results indicate that land-based investments alone are not sufficient to offer sustainable perspectives in terms of a transition from resource- to wage-based livelihoods. More so, they are accompanied by livelihood implications that necessitate consideration. This transformation requires alternative opportunities both within and beyond the agricultural sector to absorb labor that was crowded out from traditional livelihoods (T. M. Li, 2009; Nolte & Ostermeier, 2017). However, these are not being sufficiently generated by land-based investments. On the contrary, local livelihoods may be destroyed, particularly among disadvantaged peasants with fewer resources (Oya & Pontara, 2015; Rigg, 2020).

Our results support the hypothesis that the number of jobs created by land-based investments and peasant engagement with them varies across contexts, while additionally revealing that peasant engagement in wage employment may be a coercion rather than a choice. Peasants are most likely to engage in precarious work with land-based investments, such as seasonal jobs during the development phase with low wages. There was also a high association between engagement with employment and the degree of land dispossession. In a significant number of villages, peasants were not only expelled from land and resources but also employment opportunities with land-based investments. At the same time, a substantial number of these jobs were filled by foreign migrants. In the small number of villages where individual land dispossession and access to resources were not an issue, peasants were able to maintain their traditional livelihoods and wage-labor opportunities created by land-based investments presented an option for additional income. However, in the majority of villages, land-based investments transformed property and labor relations thus affecting rural employment through three processes: i) dispossession without proletarianization; ii) greater extent of land dispossession with limited proletarianization; and iii) adverse incorporation into semi-proletarianization.

7.1.1. Dispossession without proletarianization

In more than one-third of our sample, former land users were both expelled from individual and communal land, as well as excluded from wage-labor opportunities created by land-based investments as described in section 6.3.3. Borras Jr & Franco (2013) refer to this process as 'dispossession without proletarianization,' supporting T. M. Li's critique of the global land-based investments' relationship with host countries, stating that "their land is needed, but their labor is not" (2011, p. 286). In many cases, peasants are entirely excluded from these wage-labor opportunities from the onset, having never been approached by investors (Figure 6). In other cases, investors relied solely on foreign or internal labor, e.g., family members, rather than hiring local labor. This has been observed among small-scale domestic land investments in Lao PDR, which are often run as a family business (Hett et al., 2020) relying exclusively on family labor (Lui & Chiu, 1999; Newman & Gertler, 1994). In only a small number of villages were villagers offered jobs with land-based investments. In cases of refusal, villagers mentioned low wages, poor working conditions, or more attractive alternatives available to them.

The separation of peasants from their land and forest without sufficient alternative opportunities provided by land investments may not only push peasants into precarious conditions, but could also contribute to the reproduction of poverty rural areas, especially in the medium and long terms (see Hickey & du Toit, 2007; Hutchison & Wilson, 2020; T. M. Li, 2011). Land, forest resources, and livestock continue to be essential to the resilience of rural

livelihood strategies. The majority of the rural population continue to rely on land either for subsistence or market-oriented smallholder production (LSB, 2016; Nanhthavong, 2017; World Bank, 2018). Households with smaller land holdings are already at greater risk to crop and market failures (see Junquera & Grêt-Regamey, 2020). Meanwhile, forest resources, such as NTFPs, and livestock are substantial components of rural resilience, as they provide additional income, shore up food security, and offer alternative mechanisms against unexpected shocks (LSB, 2018, 2020; Parvathi & Nguyen, 2018; Rigg, 2006; Singh, 2020; Van Der Meer Simo et al., 2019, Millar & Photakoun, 2008; Nanhthavong, 2017). Our findings show that these livelihood and resilience strategies are threatened by land-based investments echoing the critique of Haller et al. that land deals are not only the process of farmland grabbing in the Global South but also "resilience grabbing" (2020, p. 2). The majority of villages were excluded from proletarianization and experienced individual land loss to land-based investments. Many households lost significant amounts of individual land to investments; in some cases, households lost amounts greater than the average smallholder landholding in Lao PDR of 2.4 ha/household (MAF, 2014). Most villages also saw decreased access to forest resources and the number of livestock due to pasture land displacement and agro-chemical contamination (Nanhthavong et al., 2021). Without livelihood alternatives to compensate for these constraints in land and resource access caused by land-based investments, the vulnerability of local populations is exacerbated or, as Cruz-Del Rosario and Rigg put it, turned into precarity (2019).

7.1.2. Greater extent of land dispossession with limited proletarianization

Our findings indicate that the number of jobs created by land-based investments varied across types of investments, and that the effect on rural employment was independent of overall employment generation. First, although land-based investments created significant amounts of employment opportunities, only a limited number were offered to former land users; the bulk were filled by foreign workers. This was especially the case for jobs requiring higher skills and in the operational phase. Foreign investments resulted both in significant land dispossession and a higher share of foreign workers. This may indicate that the skill level of locals is out-competed by foreign workers, or it may indicate that investors prefer foreign labor due to the lack of legal protections that may ease exploitation (Kenney-Lazar, 2012; T. M. Li, 2011; Oya, 2013b). There is a large evidence-base that suggests that migrant workers are most vulnerable to precarious employment and life (Lewis et al., 2015; Pye et al., 2012; Tappe & Nguyen, 2019), however, this is beyond the immediate scope of this paper.

Second, large-scale land deals produce more individual and communal land dispossession and apply greater capital substitution of labor, such as mechanization, than small-scale deals. This is observed particularly in the central and southern regions of the country, and results in proportionally lower job creation rates in large-scale deals. Third, tree crops have been assumed to require higher labor inputs than annual crops (Nolte & Ostermeier, 2017), but this is not supported by our observations. In our sample, tree plantations generate smaller numbers of jobs per hectare than crop deals, and also resulted in greater individual and communal land dispossession. In Lao PDR, tree plantations are the most prevalent form of land-based investment in terms of both size and number, and are more likely to affect multiple villages, posing a more significant risk to local communities of land dispossession with limited proletarianization.

Finally, it has been proposed that the number of jobs would increase as the land deal reaches the fully operational phase (Cotula, 2014; Deininger & Byerlee, 2011). Our results confirm the greater number of jobs during the operational phase, however, further, reveal that fewer former land users are employed during this phase compared to the development phase. There are two potential explanations for this result. First, operational phase jobs may require greater technical skills. For instance, tapping rubber requires specific skills and must be carried out at night. As noted in Figure 7, skills trainings were not offered by investors in most cases in our sample. Second, our results

reveal that jobs with land-based investments are often low quality, with low wages or only seasonally available. Thus, relying on these employment opportunities may be a strategy for immediate coping with losses in initial years of the investment, referred to by Oya and Pontara as "survival strategies" (2015), but are not attractive livelihood options in the long run. More attractive options might include expansion of smallholder production through access to new farmland cleared in nearby forest, cultivation on reserved land, or emigration (Nanhthavong et al., 2020). Migration from rural areas to nearby cities or neighboring countries for employment has increasingly become a common strategy to cope with stresses, especially among young people (Andriesse & Phommalath, 2012; Barney, 2012; Manivong et al., 2014; Rigg, 2007).

7.1.3. Adverse incorporation into semi-proletarianization – *women in particular*

Our results show that the majority of former land users became semi-proletarians, but there were no cases in which they became fully proletarianized. While many former land users engaged in low quality, seasonal wage-labor with land investments, they continued their traditional livelihoods of smallholder agricultural production for subsistence or market purposes, as presented in Figure 2, although this is subject to change in the longer term as proletarianization continues to develop (see Oya, 2013b). Results from regression analysis indicate that proletarianization is more prevalent where land-based investments caused greater extents of individual land dispossession or in more remote areas. This may be due to three reasons. First, with greater land dispossession, displaced households who did not retain sufficient land to sustain their livelihoods were forced to engage in low-quality wage-labor within the investments to compensate for their lost livelihoods. Second, proletarianization may be more prevalent in remote areas due to the limited availability of alternatives (Epprecht et al., 2008). This includes alternative employment, such as those more readily available or attractive options in provincial capitals, or prohibitively high costs of clearing previously uncultivated land for agricultural expansion (Nanhthavong et al., 2020; Epprecht, Weber, et al., 2018; MAF, 2014; Mccarthy et al., 2012; Oxfam, 2011). Further, the labor force in more remote areas may have lower levels of employment skills, such as lower rates of literacy (LSB, 2016), limiting their ability to engage in other development opportunities. Third, although a higher proportion of local people in wage employment with foreign investments compared to domestic ones, engaging in employment with the investment may be due to lack of alternatives rather than by choice because the foreign investments resulted in largest proportion of land and resource dispossession (Table 2).

Further, our analysis reveals a gender dimension to these employment dynamics. Women are more likely than men to be involved in precarious wage-laborer with land-based investments. They are not only more likely than men to take jobs with land-based investments, but a higher share of women also enter into low-quality jobs such as seasonal work with lower wages, as elaborated in Table 7 and Table 8. These numbers do not reveal women's age or their marital status, but the general trend could be explained by the fact that in Lao PDR, women play an important role in farming and collecting NTFPs for food and income (ADB & World Bank, 2012; Ireson, 2013), and therefore in need of alternatives when evicted from these resources. In contrast, men are more likely to travel further distances or temporarily emigrate to take jobs with higher-wages such as in the non-farm sector (see also ADB & World Bank, 2012; FAO, 2018). Women may be more limited in these options due to a lack of necessary skills such as low literacy (LSB, 2016). This is supported by the overall trend in Southeast Asia of women being more likely to enter into low-paying jobs due to lower skills and household gender roles, such as child rearing and ensuring food security (Elias, 2020). Further, empirical evidence from other countries suggests that it is easier for investors to exploit and depress wages when hiring women due to a lack of bargaining power (Behrman et al., 2012), and female labor may come with the additional opportunity to exploit the labor of children who accompanied their mothers to their workplace (De Schutter, 2011).

The labor division between women and men in land-based investments is determined by wages rather than physical strength contrasting with traditional labor divisions in Lao PDR (ADB & World Bank, 2012). For instance, heavy manual jobs such as land clearing and digging holes for crop planting are traditionally carried out by men. However, our data show that more women are employed in these functions, which supports Boserup's classic argument that the gendered division of labor in agricultural production depends on ideology and power relations, rather than on "objective" criteria such as physical strength (1970).

While compensation for high-skilled labor in our sample was much higher than the official 2015 minimum wages in Lao PDR, former land users rarely benefit from these positions, as they are primarily filled by foreign workers. On the contrary, local people employed by land-based investments were more often paid wages below the minimum wage. While further investigation is still needed to compare between the wages paid by land-based investment and the ones in smallholder agricultural production, the claim on low wages was one of the most common reasons that peasants did not engage in wage-labor with land deals in our sampled villages (Figure 6). The low wage within land-based investment is in stark contrast to the notion that land-based investments will bring employment opportunities and higher wages to rural areas (Deininger & Byerlee, 2011). The release of surplus labor from traditional livelihoods and the addition of immigrant labor places downward pressure on already low, rural wages (Harvey, 2003; McCarthy, 2010; Stoler, 1995). This resonates with the classic Marxian framing of this process as an exploitation of surplus labor for value addition in capitalist accumulation (Cleaver, 2001).

7.2. Potential measures to prevent precarization and maximize benefits for peasants

Our results highlight four points in the development of land-based investments that may contribute to the prevention of precarity, while simultaneously maximizing benefits for peasants, particularly those who have been separated from their land and resources. First, a social safety net, e.g. food related and skills transfer programmes (see Beegle et al., 2018; Narayanan & Gerber, 2017), needs to be established to protect peasants, especially in the transition period. This includes protection of peasants' rights to land and communal resources, sush as forest and pastures, until there are sufficient and more long-term employment opportunities within and beyond the agricultural sector so as to reduce reliance on these resources. At the moment, land- and forest-based resources continue to play a significant role in rural livelihoods and resilience strategies, particularly for those who may not be in the position to adapt to livelihoods in the non-farming sector, such as the elderly. The current minimal and low-quality jobs offered by land-based investments do not compensate for the disruption in resilience strategies, safety nets, and reduction in livelihood diversity, increasing peasants' vulnerability and exposure to precarity (Rigg & Salamanca, 2009). Employment with land-based investments should be a choice and offer an increase in livelihood security, rather than a constraint due to eviction from other options.

Second, our results caution against promises associated with large-scale, particularly capital-intensive, land-based investments. While large-scale investments are purported to accelerate agricultural growth, the capital-intensives investments in our sample resulted in greater land and resource dispossession as well as proportionately fewer jobs to former land users compared to smaller-scale investments. This illustrates a classic trade-off between rapid economic growth through large-scale, capital-intensive agricultural production (Collier & Dercon, 2014; World Bank, 2008) and more incremental growth through labor-intensive approaches that generate more employment to the benefit of a greater proportion of the rural population with the potential to enhance human well-being and reduce poverty (see Carroll, 2020).

Third, enforcement of labor regulations is fundamental to increasing the benefits from land-based investments for peasants. This includes adherence to caps on foreign labor (GoL, 2013) and official minimum wages, formalization

of employment contracts, and legal protection. Formalizing employment would not only prevent labor exploitation by employers, but also enable the country to increase tax revenue through income taxes (Elveren, 2010; Gerard & Bal, 2020). Both investors and government agencies at all levels should be responsible for the provision of skills trainings for local people that would not only increase their ability to engage in wage-labor with land-based investments, particularly also developing careers in relatively higher paying positions during the operational phase, but also provide opportunities for labor reallocated from agriculture to seek employment in other sectors.

Finally, peasants would benefit from enhanced information flows on the investments impacting them in general, potential benefits and consequences, and specifically skills training and job opportunities.

8. Conclusion

This paper explores the effects of land-based investments for agricultural purposes on rural employment, focusing on how land-based investments contribute to the transition of land- to wage-based livelihoods in rural areas. The paper draws insights from a recent, unique dataset on land concession inventory in Lao PDR containing key data on the main characteristics, implementation processes, and impacts, including land and resource dispossession, and employment across socio-ecological contexts. Our results indicate that in the majority of cases, land-based investments transformed property and labor relations and pushed peasants into precarious conditions through three main processes. These included dispossession without proletarianization, greater extent of land dispossession with only limited proletarianization, and adverse incorporation into semi-proletarianization. These processes are even more prevalent in the cases of large-scale land deals, such as tree plantations, where investments triggered a greater extent of individual and communal land dispossession, and in remote areas where limited alternative development opportunities are available. Women are more likely to be exposed to the downgrading of their livelihood opportunities as compared to men due to intra-household gendered division of labor, ideological gender roles that may inhibit women's mobility, their skills level, and lack of means for engaging in better jobs outside land-based investments.

We conclude that promoting land-based investments as an alternative pathway of rural development, specifically to drive the transformation from resource- to wage-based livelihoods is not effective without development opportunities in other sectors, such as in the non-farm sector in rural areas, in order to absorb surplus labor reallocated from the agricultural sector, and the establishment of a social safety net to buffer livelihood losses of the rural population during this transient state. The amount of direct employment opportunities within land-based investments offered to local people is small, and most jobs are insecure, low-skilled, and seasonal with low wages and minimal potential for upwards mobility. Jobs that require higher skills and pay better are largely fulfilled by migrant, men. In this regard, land-based investments risk augmenting an often landless, surplus labor force in rural areas, rather than contributing to a sustained transformation from resource- to wage-based livelihoods.

Based on these insights, current development pathways through land-based investments in the Global South appear in a different light. Though land-based investments may become an important driver for agricultural growth, market integration, and trade in developing countries, these investments do not benefit peasants at large, but rather push them into precarious conditions. These processes severely threaten the host countries' ability to achieve the 2030 sustainable development agenda. We recommend a context-based development approach as an alternative to global, large-scale land-based investments. In contexts where the cost of labor is already low, the promotion of labor-intensive production should be considered. Furthermore, homogenous treatment of rural populations to promote marketization through deagrarianization is inadequate, as peasant families greatly vary in household composition, generational, gender, and ethnic aspects, as well as land use and economic strategies. Households and their

members' capacity to adapt to transitioning livelihoods greatly varies (see Rigg et al., 2018). Therefore, protecting land-use rights including access to communal resources, especially forests where locals access for NTFPs and wild animals, and pasture for livestock is imperative, since they not only play an essential role in their livelihoods in terms of food security and income but also provide a core safety net in rural areas.

Finally, information campaigns on employment opportunities and enforcing labor regulations including restriction of hiring foreign workers and official minimum wages are urgent, while simultaneously, skills transfer to peasants is a crucial measure that both investors and the GoL should consider. Enhanced skills will not only place the rural population in a better negotiating position vis-à-vis investors regarding employment and labor conditions, but it will also increase their competitiveness with foreign workers. This is particularly important in light of the free movement of skilled-labor policy under the ASEAN Economic Community (AEC). AEC will encourage regional integration, competitive and free movement of goods, services, investments, capital, and skills. Lao PDR will be challenged by its competitive neighbors. Therefore, in the light of these imminent transformations of economic and social relations, rural employment effects and livelihood transitions could become even more pressing questions for future research priorities.

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Appendix

Table A: Number of deals and developed area by types of land-based investments included in the analysis

				Origin of investors			Phase of operation	
Type of commodity	**Number of sampled villages**	**Number of deals**	**Developed area (ha)**	**Domestic (ha[a])**	**Foreign (ha[a])**	**Joint venture (ha[a])**	**Development phase (ha[a])**	**Operational phase (ha[a])**
Crops	**67**	**44**	**34,762**	**18 (1292)**	**19 (32,972)**	**7 (498)**	**12 (6025)**	**32 (28,737)**
Sugarcane	25	4	26,315	1 (148)	3 (26,168)	0	0	4 (26,315)
Coffee	7	7	591	1 (35)	3 (286)	3 (270)	2 (163)	5 (428)
Cassava	5	5	393	4 (293)	1 (100)	0	1 (N/A)	4 (393)
Banana	4	4	348	1 (67)	3 (281)	0	0	4 (348)
Other	26	24	7115	11 (750)	9 (6137)	4 (228)	9 (5862)	15 (1254)
Livestock	**44**	**41**	**6870**	**36 (4314)**	**5 (2556)**	**0**	**23 (3234)**	**18 (3637)**
Cattle	39	36	6636	33 (4129)	3 (2506)	0	23 (3234)	13 (3402)
Other	5	5	235	3 (185)	2 (50)	0	0	5 (235)
Tree plantation	**171**	**79**	**124,739**	**28 (5219)**	**43 (96,789)**	**8 (22,731**	**31 (45,968)**	**48 (78,771)**
Rubber	115	57	76,953	22 (4413)	33 (71,509)	2 (1031)	18 (19,739)	39 (57,214)
Eucalyptus or acacia	44	12	46,609	2 (159)	6 (24,767)	4 (21,683)	8 (25,389)	4 (21,220)
Agarwood	7	5	798	3 (638)	1 (143)	1 (17)	3 (681)	2 (117)
Other	5	5	380	1 (10)	3 (370)	1 (N/A)	2 (160)	3 (220)
Total	**282**	**164**	**166,372**	**82 (10,826)**	**67 (132,317)**	**15 (23,229)**	**66 (55,227)**	**98 (111,145)**

[a] *Developed area refers to the area has been developed up to the time of assessment. N/A = No data available*

Source: 2017 LCI. Table by authors.

Table B: Company interviews by type of land-based investments

			Origin of investors			Phase of operation	
Type of commodity	**Number of companies**	**Developed area (ha)**	**Domestic (ha[a])**	**Foreign (ha[a])**	**Joint venture (ha[a])**	**Development phase (ha[a])**	**Operational phase (ha[a])**
Crops	34	28,830	12 (850)	16 (27,538)	6 (442)	10 (726)	24 (28,104)
Livestock	34	4808	31 (4158)	3 (650)		21 (3234)	13 (1574)
Tree plantation	50	96,887	17 (2838)	29 (72,881)	4 (21,167)	18 (27,971)	32 (68,916)
Total	**118**	**130,525**	**60 (7847)**	**48 (101,069)**	**10 (21,609)**	**49 (31,931)**	**69 (98,594)**

[a] *Developed area refers to the area has been developed up to the time of assessment*

Source: 2017 LCI. Table by authors.

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Declaration of consent

on the basis of Article 18 of the PromR Phil.-nat. 19

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Bachelor ☐ Master ☐ Dissertation ☑

Title of the thesis: Pathways to sustainable agricultural investments in the Lao PDR: Transformations in natural resource and labour relations through land-based investments and their impacts on human well-being

Supervisor: Prof. Dr. Peter Messerli and Co-supervisor Dr. Michael Epprecht

I declare herewith that this thesis is my own work and that I have not used any sources other than those stated. I have indicated the adoption of quotations as well as thoughts taken from other authors as such in the thesis. I am aware that the Senate pursuant to Article 36 paragraph 1 litera r of the University Act of September 5th, 1996 and Article 69 of the University Statute of June 7th, 2011 is authorized to revoke the doctoral degree awarded on the basis of this thesis.
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